massDOT
Massachusetts Department of Transportation

Massachusetts Freight Plan

prepared for

Massachusetts Department
of Transportation

prepared by

Cambridge Systematics, Inc.
101 Station Landing, Suite 410
Medford, MA 02155

with

Regina Villa Associates
Portscape, Inc.

Funded by the Federal Highway Administration

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Online Edition

An online edition of this document with a condensed narrative and interactive maps is available at:

http://www.massdot.state.ma.us/planning/Main/StatewidePlans/FreightPlan.aspx

Letter from the Secretary and CEO

On behalf of the Massachusetts Department of Transportation (MassDOT), I am pleased to present this Massachusetts Freight Plan. This document lays out a vision for a multimodal freight system that is safe, secure, resilient, efficient, reliable, and sustainable, and one that catalyzes economic development while supporting the continued competitiveness of the Commonwealth. The strategies identified in this plan have been developed through a risk-aware, scenario-based process and are believed to be appropriate responses to whatever the future holds. This document is a companion piece to the ***Massachusetts State Rail Plan***, which discusses that mode in more detail.

Upholding MassDOT's priority of customer service, the Massachusetts Freight Plan was developed through collaboration with a Freight Advisory Committee of industry members and municipal and regional leaders. MassDOT consulted with a wide range of subject matter experts from State and Federal agencies and sought public feedback at four workshops in different regions of the Commonwealth. We are confident that the strategies proposed herein serve the people of Massachusetts whenever they interact with our transportation system.

This document satisfies Massachusetts's obligation under the **Fixing America's Surface Transportation (FAST) Act** to "develop a freight plan that provides a comprehensive plan for the immediate and long-range planning activities of the State with respect to freight." MassDOT has collaborated with the **Commonwealth's Metropolitan Planning Organizations (MPOs)** to identify critical urban and rural freight corridors for inclusion on the **National Highway Freight Network** alongside Primary Freight Routes and the **Interstate Highway System**. Further, this Freight Plan identifies freight investments for fiscal years 2018 through 2022.

The Commonwealth already is investing in the freight system. MassDOT completed its last Freight Plan in **2010**. Of the projects prioritized by that effort, MassDOT and its partners have completed improvements to **Worcester's Franklin Street Terminal** and the Department has instituted the recommended **Industrial Rail Access Program (IRAP)**. Boston Harbor dredging and improvements

to freight rail lines are ongoing. Massport is expanding Conley Terminal and MassDOT is improving the I-495/I-90 interchange to improve the flow of cargo along a “freight spine” that connects Conley Terminal to the Interstate Highway System through local haul roads and to the national freight system through terminals in Worcester and other locations.

The strategies in this plan will build on those investments. Many of the 2010 Freight Plan's policy initiatives, including preservation of sites for industrial and logistics development and construction of improved truck parking, are carried forward in this effort.

Among the strategies proposed in the 2017 Massachusetts Freight Plan are: improving the Commonwealth’s stock of truck parking and servicing areas; resolving key bottlenecks on highways; maintaining freight access; leveraging connected vehicle technology; protecting freight facilities from climate change impacts; integrating supply chain data; and encouraging use of underutilized ports and airports as cargo gateways. The Freight Plan recognizes that enhancements to the freight system can come as improvements to infrastructure, operational innovations, or as policy revisions.

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The Freight Advisory Committee

Jonathan Gulliver | MassDOT (Chair since 5/2017)
Thomas Tinlin | MassDOT (Chair through 5/2017)

Ed Anthes-Washburn | Port of New Bedford

Chris Atwood | Unistress Corp.

Joe Barr | City of Cambridge

Pierre Bernier | Maritime International

Matthew Burwell | Legal Sea Foods

Joe Carter | SBA Global

Tom Cosgrove | NFI Industries

George Fournier | Cumberland Farms

Charles Hunter | Genesee & Wyoming Railroad

Colleen Kissane | Connecticut DOT

Mark Marasco | Maple Leaf Distribution Services

Gary Roux | Massachusetts Association of Regional Planning Agencies

Lisa Wieland | Massport

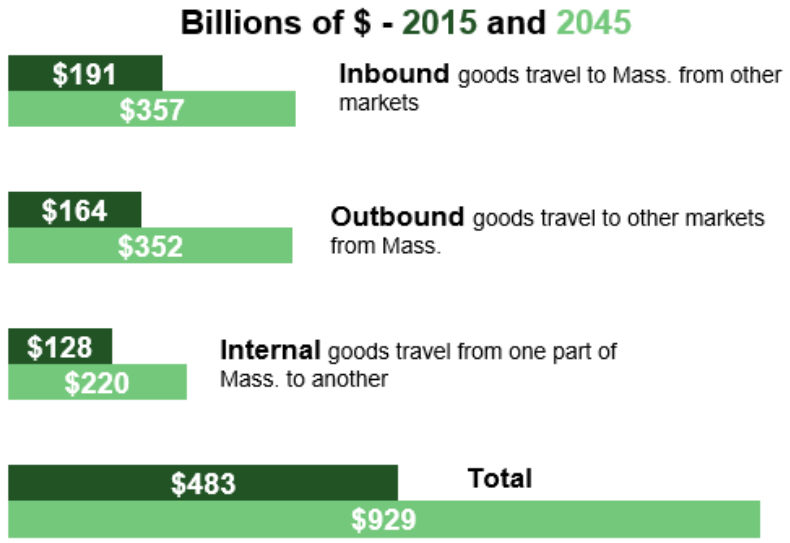
Brandon Wilcox | FHWA

Kevin Young | Global Partners

1.0 Vision and Purpose

The freight system brings produce from Central America to Central Massachusetts before it spoils and carries millions of products from Amazon Prime to your door in two days. It also serves a critical function in supporting the Commonwealth's economic development. Massachusetts's freight system transported goods valued at nearly $500 billion in 2015 and expected to approach $1 trillion in 2045.

Figure 1.1 Value of Goods in Massachusetts



Source: FHWA Freight Analysis Framework Version 4

This freight plan follows a "scenario-based analysis" model. In some traditional planning models, strategies are developed to adapt to a single projected future. This future may be the product of extending current trends or making educated guesses about coming developments and innovations. By contrast, this plan recognizes that many plausible futures exist. It identifies drivers of change in the world and the range of ways in which they could progress, and combines these into multiple plausible futures. Desirable strategies are those which allow the Commonwealth to thrive across the widest range of outcomes.

1.1 Vision and Guiding Principles

Our vision and guiding principles account for the key points of attention for the Massachusetts Department of Transportation (MassDOT), the Commonwealth of Massachusetts, and the Federal Government, among other contributors. In pursuing these goals, Massachusetts will pursue an innovative and efficient freight system that will support a thriving economy in the years and decades to come.

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.

Our guiding principles in implementing this vision are:

- 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.

1.2 Requirements and Policy Goals

The freight system impacts the ability of many communities, government bodies, and private sector organizations to achieve their policy goals. Actors and stakeholders are illustrated in Figure 1.2 (next page).

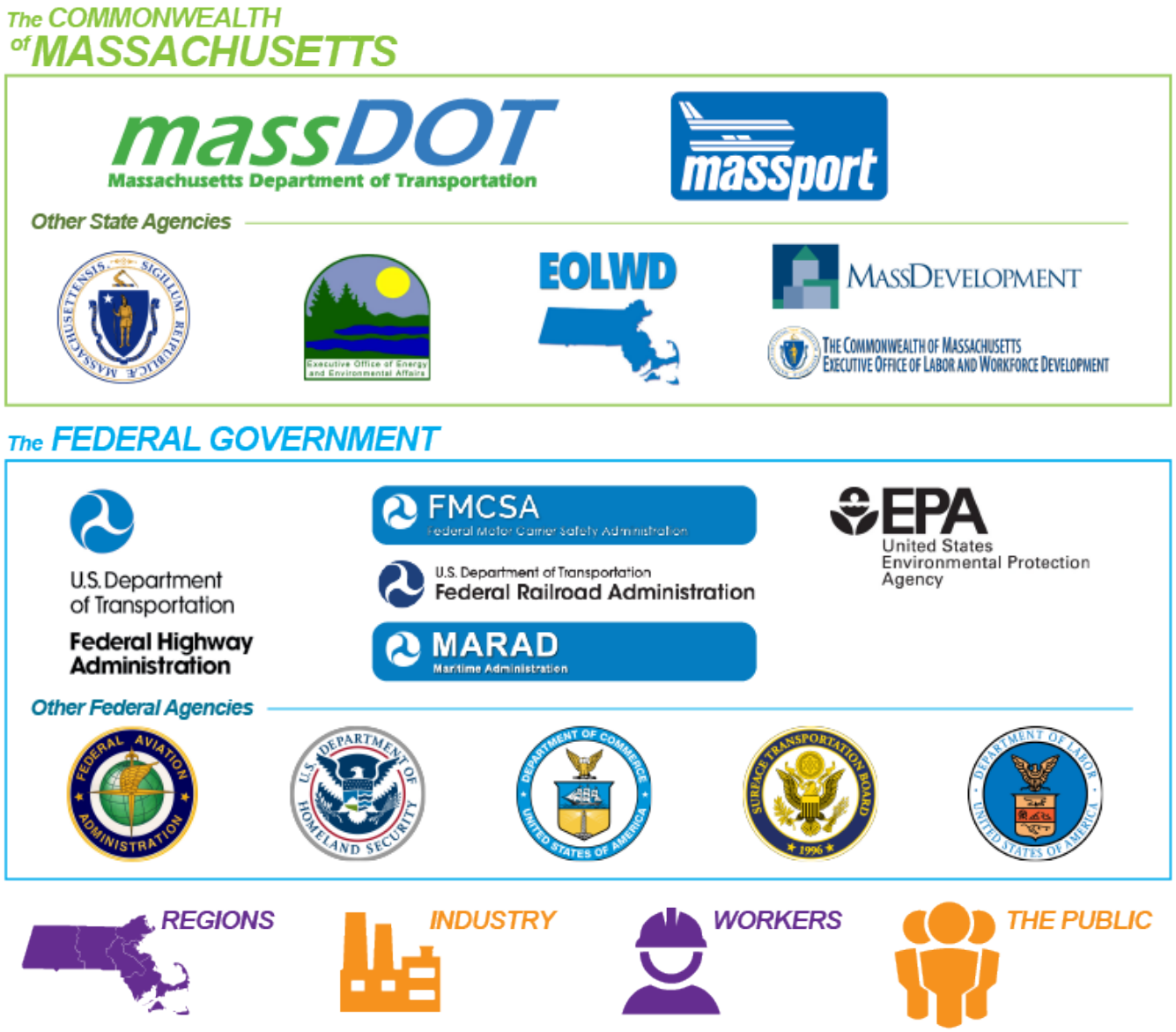
Federal Requirements and Policy Goals

The Massachusetts Freight Plan satisfies 49 USC 70202, which states that "Each State that receives funding… shall develop a freight plan that provides a comprehensive plan for the immediate and long-range planning activities and investments of the State with respect to freight."

The United States Congress established requirements for this and all other State freight plans through the **"Fixing America's Surface Transportation" (FAST) Act** in October 2015 (49 USC 70202):

- Identify significant freight system trends, needs, and issues.
- Describe policies, strategies, and performance measures that will guide freight-related transportation investment.
- List facilities on the National Multimodal Freight Network, including critical urban and rural freight corridors.
- Describe how MassDOT will meet national multimodal freight policy goals and the National Highway Freight Program goals.
- Consider innovative technologies, including Intelligent Transportation Systems (ITS).
- Describe preventive measures taken to preserve the condition of roadways projected for significant deterioration due to heavy vehicle usage.
- Inventory major freight bottlenecks and list strategies to resolve them.
- Consider the delay caused by freight movements, with mitigation strategies.
- List priority projects and describe how funds made available will be invested and matched.
- Document consultation with a Freight Advisory Committee.

Figure 1.2 Stakeholders in the Massachusetts Freight Plan



Congress also set out policy goals (49 USC 70101) for the National Multimodal Freight Network ("the Network"):

- Identify infrastructure improvements, policies, and operational innovations that:
  - Strengthen the contribution of the Network to the economic competitiveness of the United States;
  - Reduce congestion and eliminate bottlenecks; and
  - Increase productivity, particularly for domestic industries and business that create high-value jobs.
- Improve the safety, security, efficiency, and resiliency of multimodal freight transportation;
- Achieve and maintain a state-of-good-repair on the Network;
- Improve the economic efficiency and productivity of the Network;
- Improve the reliability of freight transportation;
- Improve the short and long-distance movement of goods that:
  - Travel across rural areas between population centers;
  - Travel between rural areas and population centers; and
  - Travel from the nation's ports, airports, and gateways to the Network.
- Improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity; and
- Reduce the adverse environmental impacts of freight movements on the Network.

Massachusetts Requirements and Policy Goals

Economic Development

Opportunities for All, the Baker-Polito Administration's economic development plan, laid out seven priority policy areas. This plan will interact with all of them.

- **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.

Transportation

MassDOT has set five overarching 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.

The performance goals are listed below in blue. For each goal, we have described how the freight system can impact MassDOT's ability to achieve it.

- **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 of **a 25% statewide reduction in GHG**

emissions from utilities, industry, transportation, and other sources by 2020 (Global Warming Solutions Act of 2008).

1.3 Outreach Process

The Commonwealth's prior freight plan, completed in 2010, focused on freight data and analysis. This plan will focus on customer service. MassDOT conducted customer outreach through the following efforts:

- The 17-member **Freight Advisory Committee (FAC)** met on four occasions to comment on all of the elements of this plan, chaired by the MassDOT Highway Administrator and facilitated by the project team. Membership included the public sector (ports and municipalities), industry, and representation from neighboring states. The FAC contributed to this freight plan as follows:
  - The FAC *reviewed* the existing conditions information (on the network and economy) at its first meeting and offered feedback, which was incorporated into the final presentation of that information in the Freight Plan.
  - The FAC *reviewed and revised* the plausible futures presented in Chapter 3 in order to progress them from an initial draft to the final draft in the Freight Plan.
  - The FAC *assessed* proposed strategies using an online survey for their appropriateness to each plausible future.
  - The FAC *reviewed and offered comment on* the categorization of strategies into immediate, robust, hedging and shaping and deferred buckets.
  - The FAC *read and offered comment on* the draft version of the Freight Plan document. These comments and responses to them have been documented for publication in an appendix.
- **Public Workshops** following each FAC meeting to allow residents an opportunity to freely comment on our research, analysis, vision, goals, and strategies.
- **Interviews** with industry representatives from key sectors and clusters, some of which were arranged through chambers of commerce and regional coalitions. These interviews focused on building a model of the company or institution's supply chain and documenting any challenges or needs at the forefront of the participants' minds.
- **Working groups** of subject matter experts to guide the development of strategies. There were four groups drawing from a pool of 40 experts. Membership varied by subject area: Policy and Regulation (State and Federal public sector stakeholders), Capital Planning (MassDOT multimodal planning staff), The Economy (regional chambers of commerce and business coalitions), and Infrastructure and Technology (MassDOT engineering and design staff).

1.4 Organization of This Document

This freight plan is organized as follows:

- **Chapter 1** describes the vision and purpose of the Freight Plan.
- **Chapter 2** describes the Massachusetts Freight Network, identifying key assets and facilities across the Commonwealth and their function.
- **Chapter 3** places the plan in context by discussing the Commonwealth's current economy, drivers of change in the world, and plausible futures.
- **Chapter 4** describes the strategies that Massachusetts may pursue to respond to the widest range of possible futures.
- **Chapter 5** describes how Massachusetts can implement these strategies, including actors and funding sources.

"Freight Focus" sections between the chapters shed additional light on key overarching issues.

Figure 1.3 lists where in the document MassDOT has discussed National Multimodal Freight Policy goals.

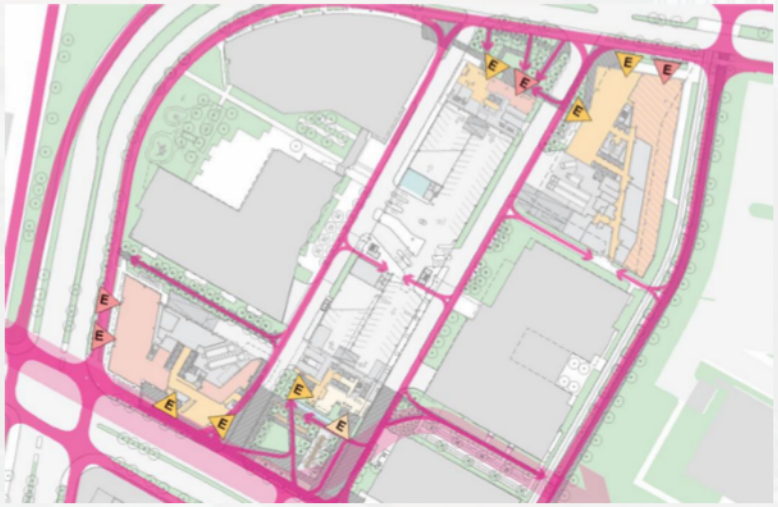
Figure 1.3 Location of National Multimodal Freight Policy Goal Discussion

Goal Level 1	Goal Level 2	Section(s)
Identify infrastructure improvements, policies, and operational innovations that:	Strengthen the contribution of the national Multimodal Freight Network to the economic competitiveness of the United States	3.1 – 3.4 4.1 – 4.4
	Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network.	2.2 4.1 – 4.4
	Improve the year-round reliability of freight transportation.	4.1 – 4.4 5.3
	Increase productivity, particularly for domestic industries and businesses that create high-value jobs.	3.1 – 3.4 4.1 – 4.4
Improve the safety, security, efficiency, and resiliency of multimodal freight transportation (in rural and urban areas).		5.3
Achieve and maintain a state of good repair on the National Multimodal (and Highway) Freight network.		5.3
Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network.		4.2
Improve the economic efficiency and productivity of the National Multimodal Freight Network.		3.1 – 3.4
Improve the reliability of freight transportation.		5.3
Improve the short- and long-distance movement of goods that:	Travel across rural areas between population centers.	2.2
	Travel between rural areas and population centers.	2.2
	Travel from the nation's ports, airports, and gateways to the National Multimodal Freight Network.	2.1
Improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity.		4.1
Reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network.		4.1
Pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.		5.1 - 5.4

Freight Focus *on Urban Supply Chains*

The last decade has seen a renewed interest in urban living among many demographic groups. Central cities have become de-industrialized and lifestyle preferences have changed. Massachusetts's urban cores house dense concentrations of offices and labs, hospitals and universities, and the retail and restaurants that support these uses.

This economic engine must be fed with supplies. Stores must feed a growing demand from a limited footprint, and are converting back rooms into floor space. This in turn requires frequent deliveries by smaller vehicles and smart decision-making on what to stock.



Site Circulation and Loading at MXD - Image credit: Boston Properties

Massachusetts residents have increased their reliance on e-commerce and home deliveries for purchases from produce to furniture. As large online retailers promise very rapid delivery (now same-day in some cases), the number of small, dedicated home-delivery vehicles rises.

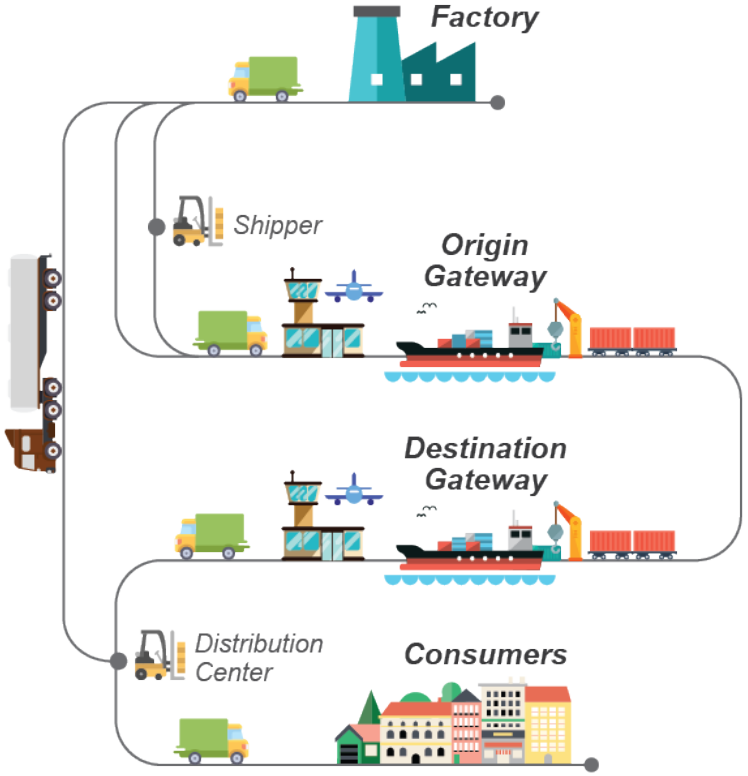
A dense urban fabric must accommodate cars and trucks; vans and bikes; loading docks and aesthetics. In addition to issues of safety and logistics, a tight network of targeted deliveries requires that urban areas host distribution centers, which require high-capacity connections to highways and ideally to railways, seaports, and airports. As these are traffic-intensive, light industrial facilities, cities may need to proactively plan more of the supply chain than they're accustomed to in coming years.

2.0 The Massachusetts Freight Network

Massachusetts consumes more goods than it produces, reflecting an industry mix that tilts toward institutions, offices, and other net consumers of freight. As a result, this section places emphasis on goods flowing into the Commonwealth (as opposed to those produced here). Figure 2.1 shows an example supply chain that moves products from the manufacturer to the consumer.

- **Gateways** include rail terminals (e.g., Worcester and Ayer), seaports (Boston and New Bedford) and airports (Boston). These facilities receive and dispatch long-haul, large-volume freight between Massachusetts, the nation, and the world.
- **Corridors** include highways and rail lines that serve both long and short-haul freight traffic.
- **Distribution and En-Route** facilities include warehouses and distribution centers, transload facilities where uniformly-packed cargo can move rapidly from trains to trucks and vice versa, truck service facilities along Massachusetts highways, and railyards. These facilities are concentrated along the I-495 belt and in the Worcester area.
- **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 2.1 Example Supply Chain



2.1 Gateways

A gateway is any location where long-haul modes (such as trucks, trains, ships, or airplanes) arrive and depart and transfer their loads to trucks for processing within the Commonwealth.

Air and sea gateways typically host U.S. Customs and Border Protection (CBP) facilities, the operational capacity of which is not necessarily within the control of the facility's operator.

In addition, it is important in this scenario-based plan to consider the impact of globalized supply chains and mode choice on gateway traffic. Specifically, if manufacturing returns in force to the United States, some goods that the Commonwealth is used to receiving by ship (cars, for example) may begin to arrive by truck and by train. Massachusetts must remain flexible and plan for this possibility.

The actors who control gateways include public and private organizations throughout the Commonwealth. Massachusetts's large rail yards are controlled by private operators, while Massport operates Logan International Airport and the Port of Boston and other seaports are managed by cities and towns.

Rail Freight Terminals

Massachusetts provides a key link for freight rail traffic entering and exiting the entire New England region, including rail arriving at West Coast ports and moving through Chicago. The majority of freight rail into southern New England comes through Massachusetts via the CSX and Pan Am Southern gateways over the Hudson River, as does a significant portion of the traffic destined for the three northern New England states.

MassDOT and the Massachusetts Bay Transportation Authority (MBTA) have acquired most major rail corridors within I-495, and have begun commuter rail service on many of them. Industry interviews indicated that goods arriving to Boston by rail most often are trucked from rail terminals in Central Massachusetts to distribution centers on the I-495 belt.

CSX is the largest Class I (annual revenue exceeds approx. $450M) railroad in Massachusetts. It operates the Boston Line west of Worcester. Figure 2.2 lists transload and intermodal terminal facilities in Massachusetts, including those operated by CSX and by others.

Figure 2.2 List of Intermodal and Transload Freight Terminals in Massachusetts

Name	Address
Intermodal Terminals	
CSX Corporation | Grafton Street	225 Franklin Street, Worcester
CSX Corporation | Stackbridge	448 Southbridge Street, Worcester
CSX Corporation | Wiser Avenue	53 Wiser Avenue, Worcester
CSX Corporation | West Springfield	151 Day Street, West Springfield
Norfolk Southern Railroad | Ayer	3712 Barnum Road, Ayer
Intermodal Terminals	
A&R Transport, Inc. | Ware	60 East Street, Ware

Name	Address
A&R Transport, Inc. | Worcester	390 Southbridge Street, Worcester
Delaware Express Company	386 Southbridge Street, Worcester
Grafton Upton Bulk Terminal	25 Maple Avenue, West Upton
Jep, Inc.	66 Western Avenue, West Springfield
RVJ Inc.	56 Nashua Street, Leominster
Superior Carriers	26 Commercial Street, Holyoke
TRANSFLO	19 Walkup Drive, Westborough

Pan Am Railways (PAR) is the primary railroad network serving Boston from the north. PAR's major terminals are located in Ayer and West Deerfield. PAR and Norfolk Southern (NS) form Pan Am Southern (PAS), which jointly owns the Patriot Corridor between Albany, NY and Ayer, MA.

Other freight rail carriers operating in Massachusetts include the **Genesee and Wyoming (G&W)**, which owns the New England Central (NECR) and Providence and Worcester (P&W) railroads.

Seaports

The *Ports of Massachusetts Strategic Plan* (2013) identified five major seaports: Boston, Fall River, Gloucester, New Bedford, and Salem. Some freight destined for Massachusetts also lands at out-of-state seaports in Providence, New Haven, and most significantly New York/New Jersey. Essentially all freight from all seaports is transferred to trucks to continue its journey.

Within the **"Port of Boston"** are multiple sea terminals, most geared to a specific purpose. These terminals and their primary product include:

- **Massachusetts Port Authority (Massport)**
  - Conley Terminal (containers) | South Boston.
  - Boston Fish Pier (seafood processing) | South Boston.
  - Boston Autoport (motor vehicles) | Charlestown.
- **Private Terminals**
  - Chelsea Creek (fuel, jet fuel, bulk cargo) | Chelsea.
  - Mystic River (bulk cargo, fuel) | Everett.

The overriding factor in the success of the Port of Boston is its cost-competitiveness against New York/New Jersey. While it will typically be cheaper for a load bound for Massachusetts to be delivered to New York, the cost of unloading and transporting that load to its final destination is lower from Boston. The degree to which it is lower – the balance between shipping and drayage costs – can make a very significant difference in demand. To manage this risk MassDOT and Massport have set a high priority on maintaining

high-efficiency road connections from the Port of Boston to nearby highways.

The **Port of New Bedford** primarily handles fish and produce, but has attempted to find new markets, including as a hub for the offshore wind industry. The **Ports of Fall River** and **Salem** primarily handle fuel. The **Port of Gloucester** primarily handles fish.

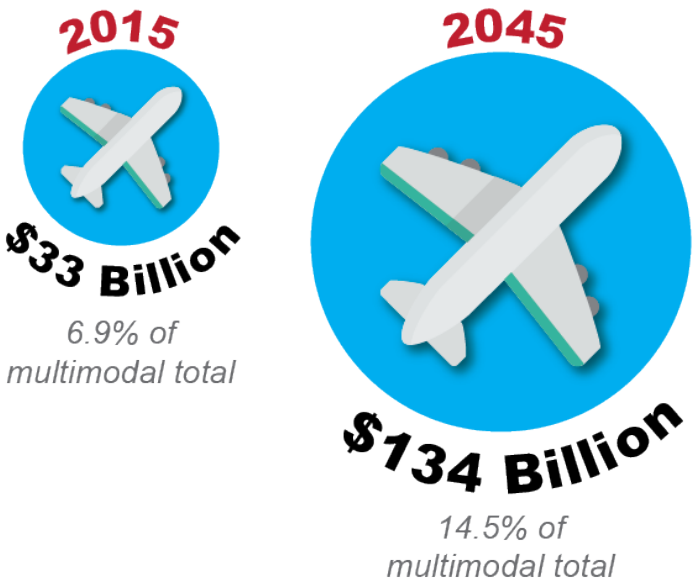
Airports

The Federal Aviation Administration reports that only one airport in Massachusetts – Logan International Airport in Boston – had meaningful air cargo traffic in 2016 (the most recent year of reporting). Massport reports that Logan handled approximately 600 million pounds (300,000 tons) of cargo that year, ranked 20th in the United States.

Air cargo is very expensive to move but air travel is the fastest and often the most flexible mode. As a result, air cargo tends to be very valuable by weight. This is especially true in Massachusetts, which has a concentration of industries that produce high-value, perishable goods (e.g., fish and biopharmaceuticals).

FHWA collaborates with the Bureau of Transportation Statistics to produce a comprehensive picture of multimodal freight movement called the Freight Analysis Framework (FAF). FAF data has shown that air cargo accounts for 0.2% of Massachusetts freight movements by weight, but nearly 7% by value. Furthermore, as shown in Figure 2.3, FAF projects air's share of Massachusetts freight value to more than double by 2045.

Figure 2.3 Air Freight Commodity Value: 2015 vs. 2045



Source: FHWA Freight Analysis Framework Version 4

Logan Airport cargo is approximately evenly split between integrated logistics shippers ("all-cargo" carriers such as Federal Express and United Parcel Service), and passenger airlines that carry cargo in the luggage hold (known as "belly freight"). Massport reports that FedEx carried 38% of Logan's 2015 freight volume, UPS carried 12%, and passenger airlines carried 43% (*Boston-Logan International Environmental Data Report*, 2015).

Figure 2.4 shows air cargo areas at Logan Airport.

Figure 2.4 Logan Airport Service Areas

Source: Massport *Boston-Logan International Environmental Data Report*

The Terminal E Modernization project will increase Logan Airport's capacity for international belly freight, but may decrease capacity for dedicated cargo flights. **Massport continues to pursue opportunities to make air cargo processing at Logan more efficient to get the most value out of limited space.**

In addition to its responsibilities at Logan, Massport continues to explore opportunities to increase Worcester Regional Airport's attractiveness as a gateway for additional air freight.

2.2 Corridors

Freight corridors serve both inbound/outbound and internal goods movement. Where they meet and interchange with each other, among other geometric changes, bottlenecks can occur.

Highways

Massachusetts highways include five major Interstate corridors: Interstates 84, 90, 91, 93, and 95; as well as seven auxiliary routes: Interstates 190, 290, 291, 391, 295, 395, and 495. Major non-Interstate corridors include US-3, US-6, MA-2, MA-3, MA-24, MA-128, and MA-146.

Major trucking routes tend to either serve Boston directly or circumnavigate the metropolitan area using I-495. The primary through route in Massachusetts enters the Commonwealth on I-84 from Connecticut and New York City, proceeds past Worcester on I-90, continues north on I-495, and exits using I-93 to New Hampshire and I-95 to Maine. An additional through route from Chicago and the Midwest enters Massachusetts via I-90 from New York. The I-495/I-90 interchange is a particularly important bottleneck along a major trucking route and MassDOT is actively seeking remedies for it.

Freight traffic, of course, is subject to the same congestion delays as all other road traffic. For that reason, it is important to look at truck traffic in the context of the national bottleneck listings developed by the American Transportation Research Institute (ATRI) and the American Highway Users Association (AHUA).

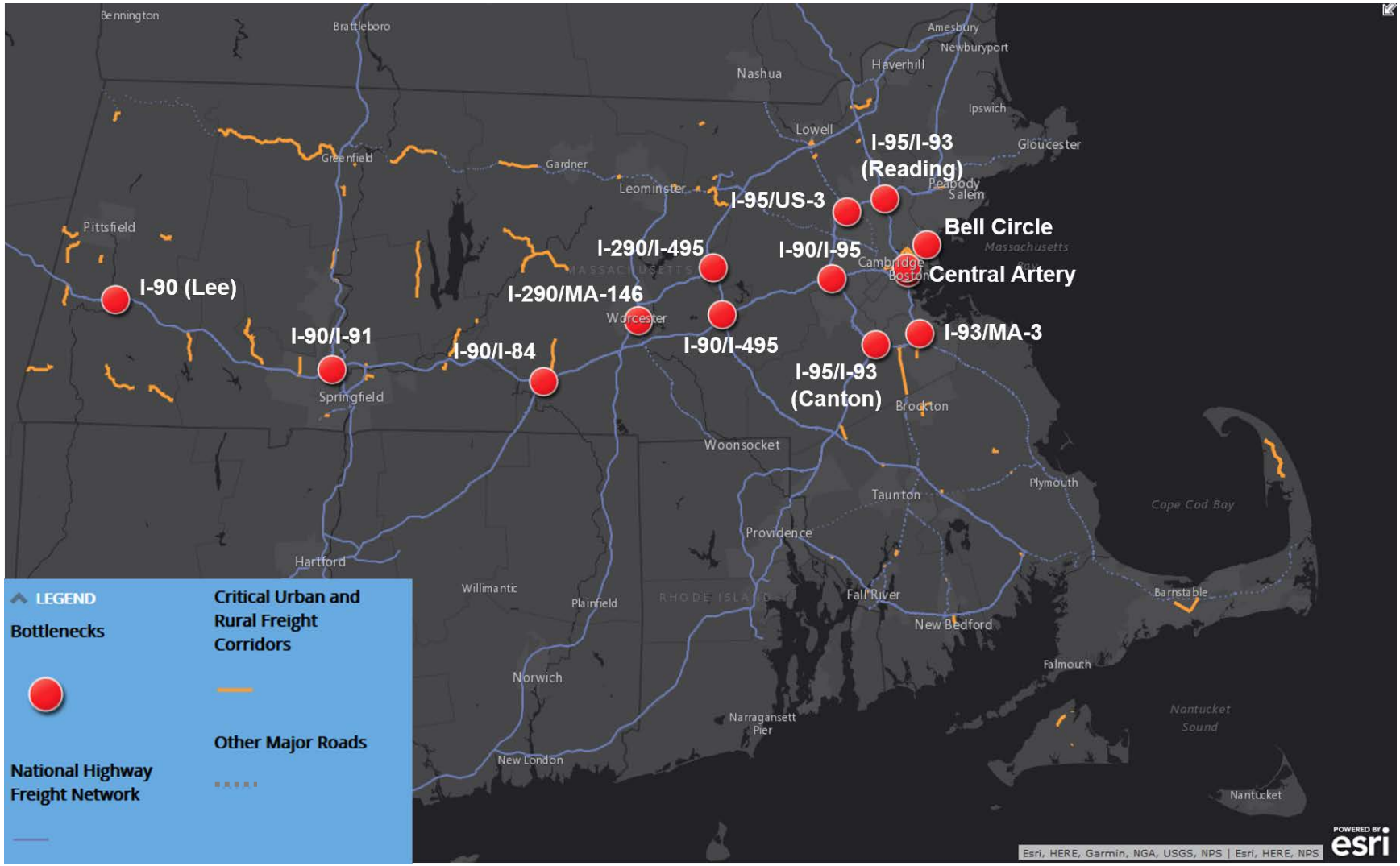
In addition to the I-495/I-90 interchange for which MassDOT is exploring various remedies, there are two other bottlenecks from ATRI – **The Braintree Split (I-93 and MA-3) and I-95/I-93 in Reading** – as well as two from AHUA – **I-90 from I-93 to South Boston and Tip O'Neill Tunnel (I-93)**. Figure 2.6 lists ATRI and AHUA listed sites, as well as the I-495/I-90 interchange and bottlenecks, as well as additional bottlenecks identified by the *2010 Massachusetts Freight Plan* based on their volume-to-capacity ratio.

Figure 2.5 List of Highway Bottlenecks in Massachusetts

Bottleneck	Source
Interstate 90, Exit 2 (Lee)	2010 Massachusetts Freight Plan
Interstate 90 and Interstate 91, West Springfield	2010 Massachusetts Freight Plan
Interstate 90 and Interstate 84, Sturbridge	2010 Massachusetts Freight Plan
Interstate 90 and Interstate 495, Hopkinton	2010 Massachusetts Freight Plan
Interstate 290 and Interstate 495, Marlborough	2010 Massachusetts Freight Plan
Interstate 290 and MA-146, Worcester	2010 Massachusetts Freight Plan
Interstate 93 and MA-3, Braintree	American Transportation Research Institute
Interstate 95 and Interstate 93, Canton	2010 Massachusetts Freight Plan
Interstate 95 and Interstate 90, Weston	2010 Massachusetts Freight Plan
Interstate 95 and US-3, Burlington	2010 Massachusetts Freight Plan
Interstate 95 and Interstate 93, Reading	American Transportation Research Institute
Central Artery Tunnel System (I-90 and I-93), Boston	American Highway Users Association
Bell Circle (US-1), Revere	2010 Massachusetts Freight Plan

Figure 2.6 maps the bottlenecks in Figure 2.5, along with the National Highway Freight Network (NHFN), Critical Urban and Rural Freight Corridors (CRFCs and CUFCs), and other major highways (dotted line) for context. The NHFN is defined by FHWA to prioritize through routes critical to interstate commerce. The CRFCs and CUFCs provide connectivity to the NHFN for manufacturers and consumers. By designating CRFCs and CUFCs, States can strategically direct resources toward improved system performance and efficient movement of freight on the NHFN.

Figure 2.6 The Massachusetts Highway System



Rail Lines

One defining characteristic of a rail line is the load that it is permitted to carry in terms of weight and in terms of speed. The current U.S. standard is that a rail line be rated for rail cars weighing up to 286,000 pounds, known as the **"286K" standard**. Higher than that is the "315K" rating, while lower is the "263K" rating. Weight ratings are based primarily on bridge and culvert strength and condition, as well as track weight. A substandard rating prevents the use of a potentially economically productive line by national carriers, but the rail industry has concluded that the benefits of 286K are significantly higher than 315K when weighed against the costs of upgrading.

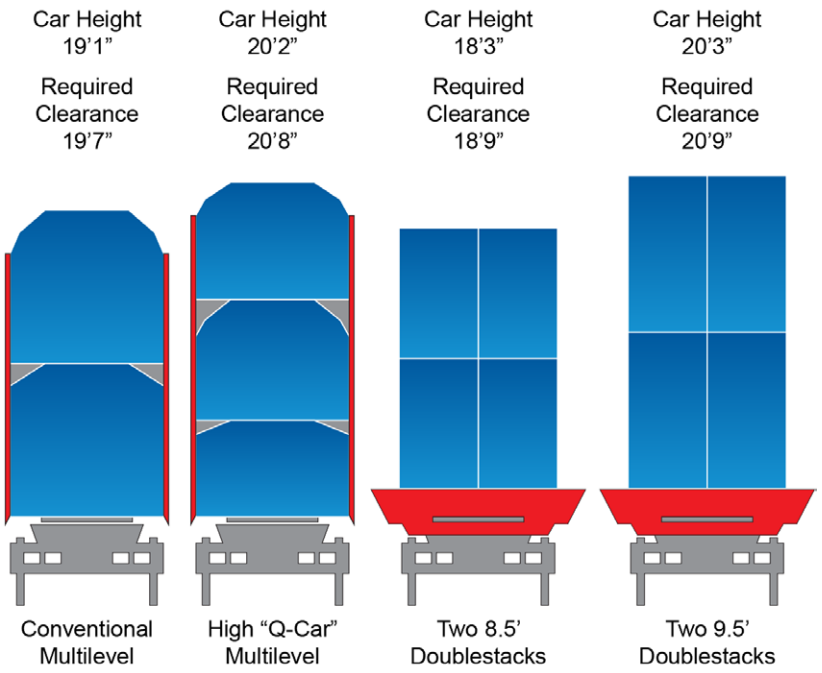
Figure 2.8 (next page) shows Massachusetts rail lines by weight rating. Only the CSX/MBTA Boston Line is rated at 315K. MassDOT's Housatonic and Ware River Lines and the PAR Main Line are rated at 286K. The remainder of the Massachusetts freight rail network is currently rated at 263K. Figure 2.8 also includes the intermodal and transload terminals listed in Figure 2.2.

A detailed discussion of the rail lines in Massachusetts, including the facilities shown in Figure 2.8, in provided in Chapter 2 of the Massachusetts State Rail Plan (yards and terminals are discussed beginning on p.41).

In addition, rail lines are rated for height based on the clearance of bridges. Accommodating intermodal freight to its full potential requires that bridges over a line be high enough to accommodate **doublestacking** (as shown in Figure 2.7). Currently, only the Boston Line is so rated.

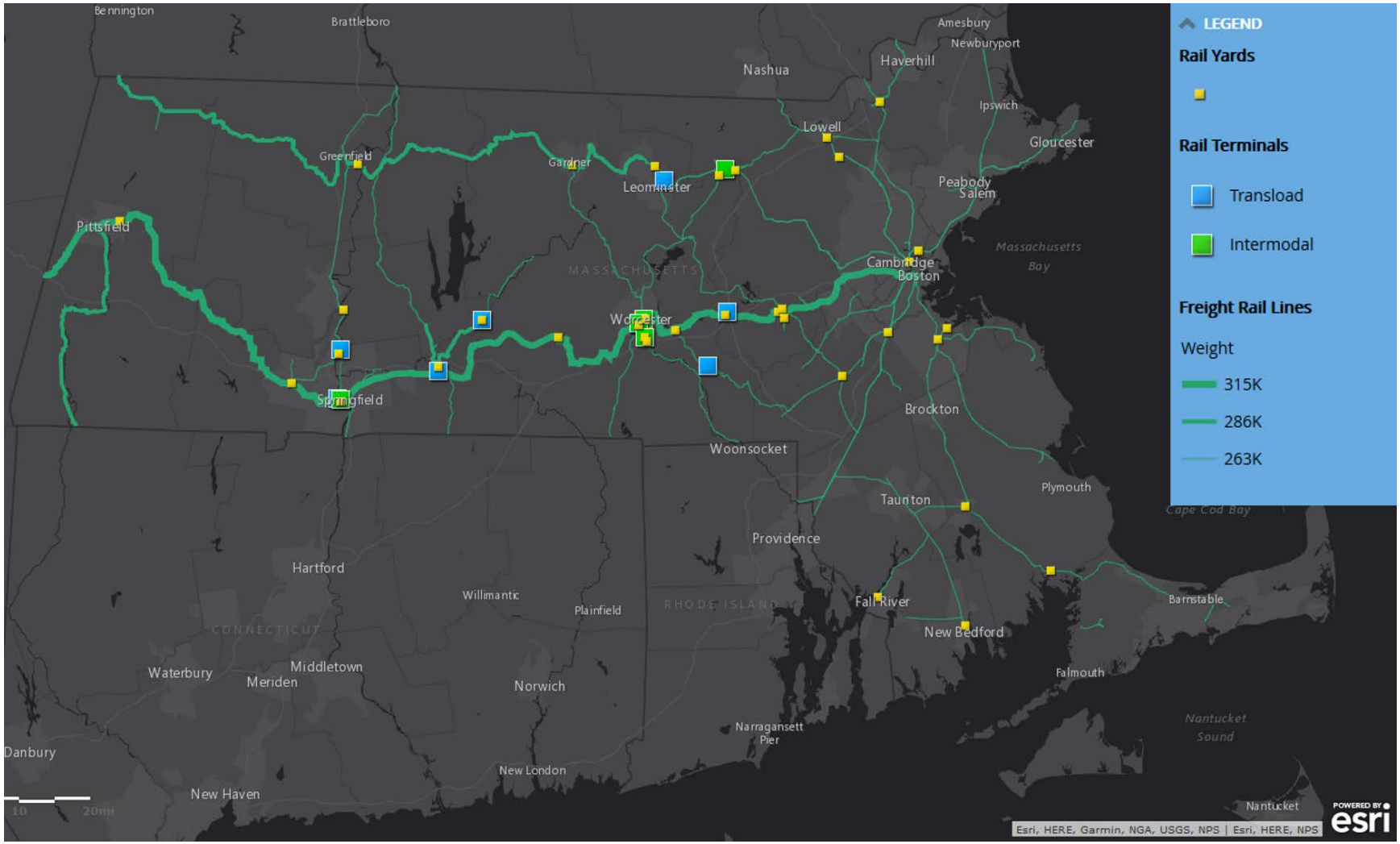
Finally, rail lines are rated for speed, based on track condition and inspection frequency, at the discretion of the owner and with the approval and oversight of the Federal Railroad Administration (FRA).

Figure 2.7 Doublestack Rail Clearances



Source: Adapted from Dean Wise, 2009

Figure 2.8 The Massachusetts Freight Rail Network



2.3 En-Route and Distribution

Truck parking areas, distribution centers, and transload facilities facilitate a healthy long-haul transportation industry.

Distribution Centers

Distribution centers receive large shipments of goods, often from wholesalers and suppliers, store those goods until delivery, and package them in loads for shipment to stores and for home delivery. Because of their function, they require high-capacity highway access and are often located near major interchanges. In Massachusetts, distribution centers often locate on the "Distribution Belt" along I-495 and US-44. Significant food distribution occurs in the Newmarket area of Boston.

Industry interviews indicated that mode shift for Massachusetts freight from road to rail and sea is complicated by the fact that many distribution centers lack direct rail or water access. Also, as urbanization and the growth of home-delivery necessitate more small-vehicle deliveries in urban areas, pressure may grow for distribution centers to move closer to the city even as development pushes them out, presenting a challenge for local authorities concerned about traffic volume.

Truck Parking and Service

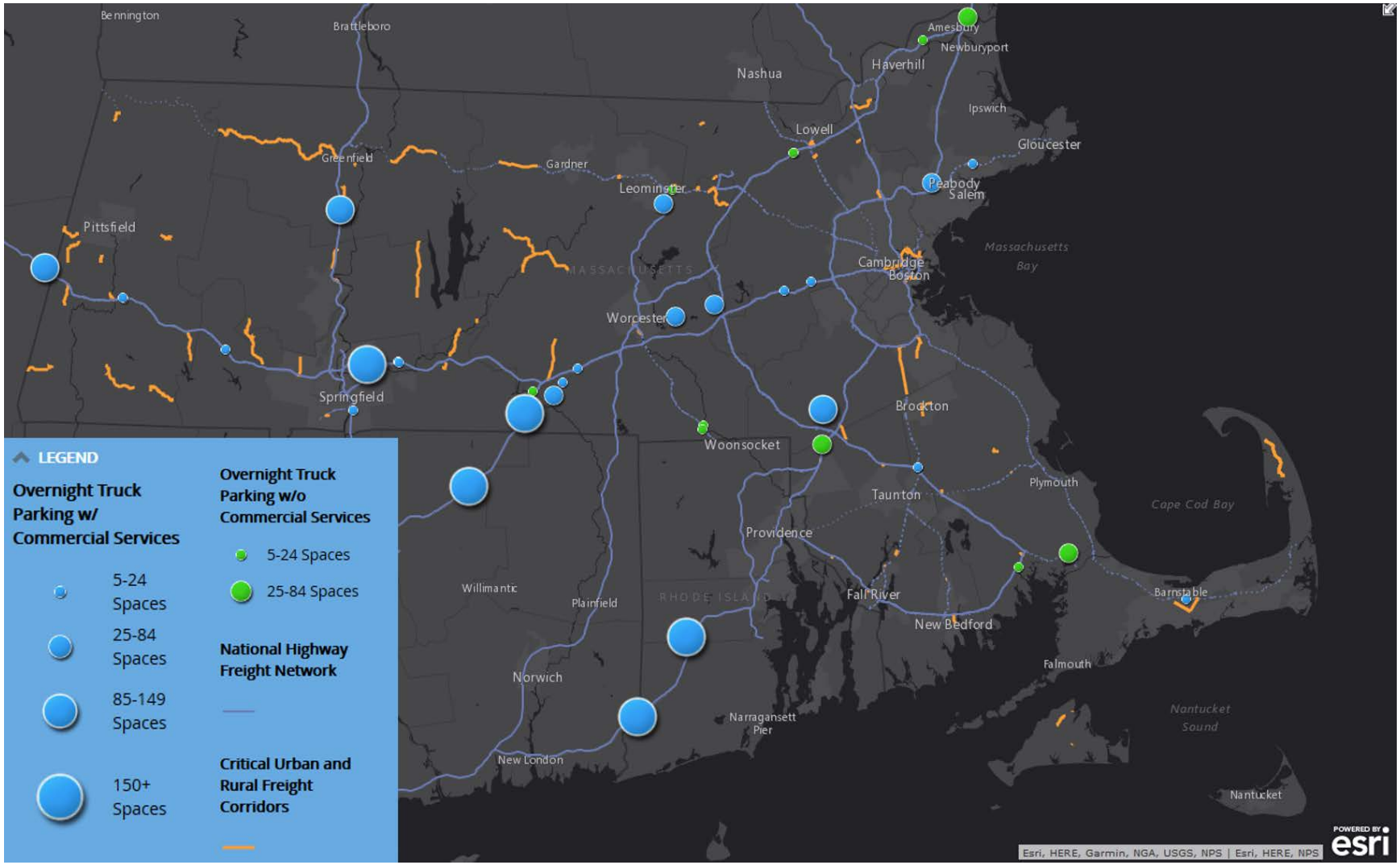
Truck parking and service facilities (e.g., "truck stops") serve several critical functions:

- **Rest Requirements** – Under the guidelines of the Federal Motor Carrier Safety Administration (FMCSA), a truck driver is limited to 11 hours of driving, followed by 10 hours of rest. When the time limit approaches, drivers must find a legal place to pull over, and it is not legal to do that on highway shoulders. Trucks can park at MassDOT-owned service areas and private truck stops, as well as in some private parking lots.
- **Repairs** – Like any motor vehicle, trucks suffer flat tires and they break down. Truck stops sometimes provide repair and maintenance facilities, and all provide an opportunity for a driver to perform repairs on their own.
- **Food and Fuel** – Both drivers and trucks must refuel during long trips. While a truck may be able to use any diesel pump at a local service station, truck stops offer many diesel pumps in purpose-built facilities.

Massachusetts suffers from a critical lack of truck parking and service facilities. Figure 2.9 (next page) shows the location of these facilities relative to major highways and the "distribution belt" that follows I-495, I-290, and US-44 along the periphery of the Boston Area. Truck stops cluster in Springfield and near the intersection of I-90 and I-84, but no parking facility public or private exists on I-495 north of I-90. This stretch of highway sees the highest truck volume in the Commonwealth.

When truck drivers run out of time and no parking is available, they face a conflict between Federal rest requirements and state safety regulations regarding truck parking.

Figure 2.9 Truck Parking and Servicing Facilities in Massachusetts and Neighboring States



Source: Reproduced from *Rest Locations for Long-Distance Truck Drivers in Massachusetts*, Boston MPO, 2016

2.4 First and Last Mile

The “first mile” of a shipment is from the factory, farm, or mine to a distribution center, railyard, or port. The “last mile” is from the distribution center to the store, home, or business. These shipments are often made by small trucks and vans, often making frequent stops and subject to mixed-traffic conditions outside the control of the carrier.

First and last mile shipments present particular opportunities for disruption by new technology. Smartphones and GPS systems provide real-time traffic and routing information, but can actually decrease efficiency when they direct drivers to roads not designed for use by trucks. Bicycles, drones, and robots all represent potential modal replacements for short-distance trucking in urban and suburban areas.

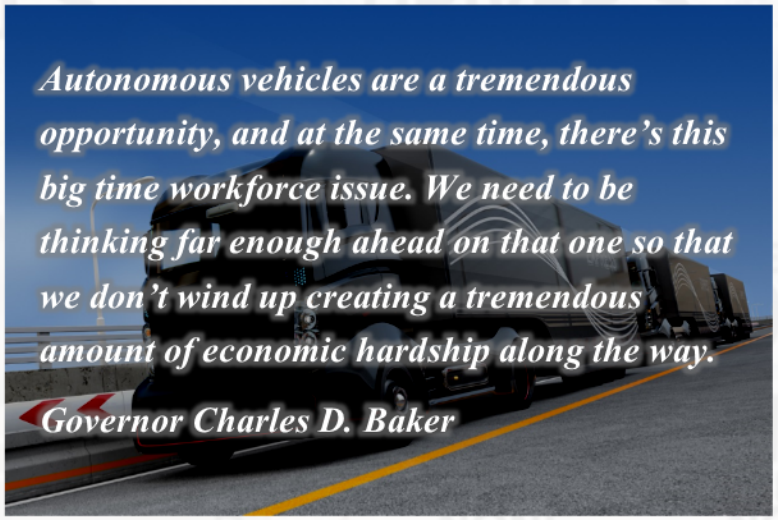
The first and last mile also includes loading zones and docks at the destination. Some urban communities have begun to set guidelines for how loading areas should be planned and managed. MassDOT supports communities in developing Complete Streets plans that include welcoming sidewalks, greenery, economic use (e.g., café tables), parklets, bicycle lanes, transit lanes, and street parking and has provided guidance on best practices for complete streets design.

These beneficial uses compete with loading zones for the same space, and properly accommodating trucks is important to ensure the safety of pedestrians and cyclists. As demand for small-vehicle deliveries continues to increase, communities may wish to develop or draw upon a toolbox for managing loading in neighborhoods and village centers.

Freight Focus *on The Trucking Workforce*

The overwhelming majority of freight in Massachusetts travels by truck. It is a significant challenge, then, that the American Transportation Research Institute estimated a nationwide shortage of 25,000 drivers in 2015, with projections that the shortage could increase to 175,000 by 2025 (*Critical Issues in the Trucking Industry, 2016*).

This critical shortage has many causes. American young people are increasingly attending college while truck driving attracts those without a degree. Commercial Driver's Licenses (CDLs) are not available until age 21, at which point potential recruits may have begun other careers. Massachusetts has formed a CDL Task Force to consider these and other issues and ensure the health of the trucking work force in the Commonwealth.



Complicating the issue, however, is uncertainty about the future of the trucking profession. Automated trucking is already in testing in the United States and elsewhere, with Walmart, Mercedes Benz, Uber, Tesla, and others looking into medium-term applications. Automated trucking has significant safety and logistics benefits (rest requirements would become obsolete, for instance).

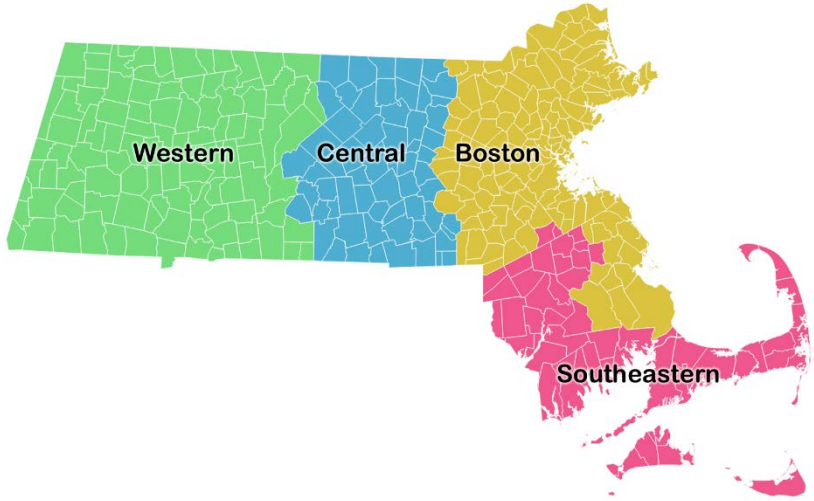
This opportunity, however, comes with an obligation to prepare and train drivers so that they remain prosperous whatever the future holds. Government, labor, and industry must be partners in order to fulfill it.

3.0 Planning Context

This chapter will place the vision, strategies, and implementation planning in the remainder of the report in the context of the Commonwealth's dynamic economy and demography. It will begin by discussing existing economic conditions and the industry clusters that thrive in Massachusetts. It will then identify and briefly discuss major drivers of global change and identify plausible futures based on those drivers.

Throughout, it will use the economic regions identified in Figure 3.1. These four regions are derived from 16 workforce development areas developed and used by the Massachusetts Executive Office of Labor and Workforce Development to keep consistent with official employment data.

Figure 3.1 Massachusetts Economic Regions



3.1 Existing Conditions

While developing this plan, MassDOT reviewed population, employment, gross domestic product, commodities, and industry cluster data. It also interviewed more than 25 companies and facilitated cross-agency public sector discussion groups to develop an understanding of supply chains and the real-world implications of Massachusetts policies and regulations.

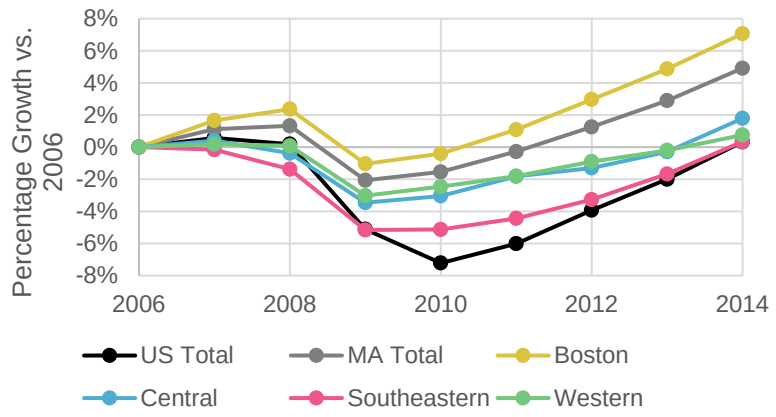
A detailed look at these topics can be found in *Technical Memorandum 1: Background Review* and *Technical Memorandum 2: Existing Conditions and Trends*. This section will summarize findings concerning the Commonwealth's economy, industry, and policy and regulation.

Economy

The economy of Massachusetts is strong and growing:

- **Population** has grown in Massachusetts over the past decade more slowly than the national average. It is growing faster in the Boston and Central regions than in others. It is growing faster than neighboring states (except for New Hampshire).
- **Employment** has grown in Massachusetts over the past decade faster than the national average. Boston is growing faster than elsewhere in the state.

Figure 3.2 Employment Growth of Massachusetts and Regions



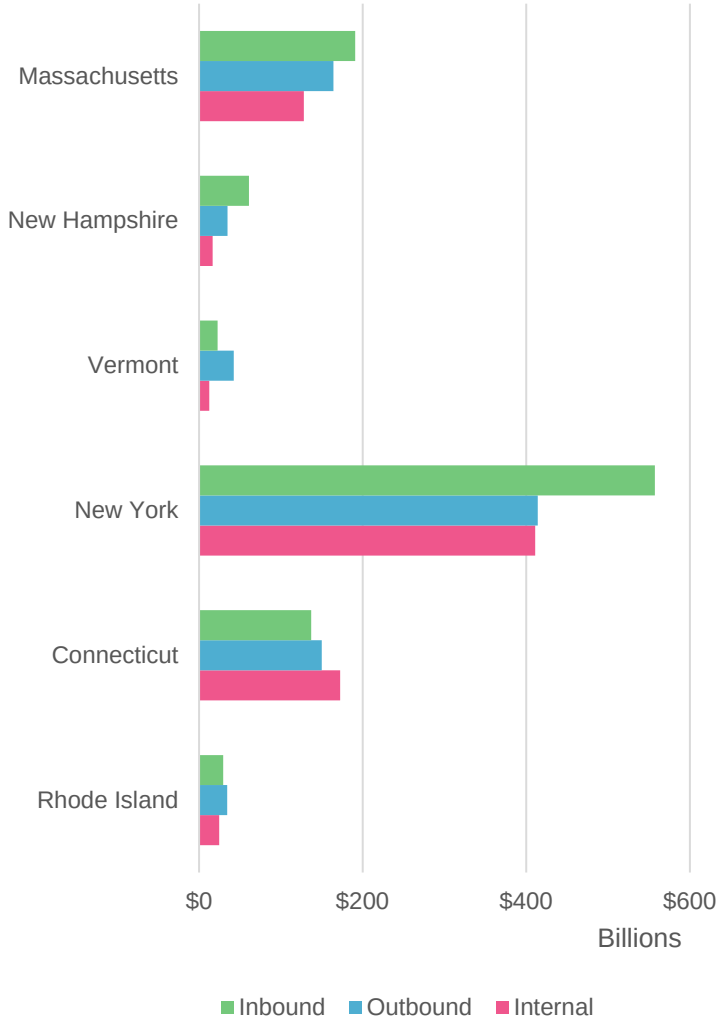
Source: US Census Bureau, Donahue Institute (UMass)

- **Gross Domestic Product (GDP)** in the state is larger than any New England state. It continues to grow at the fastest pace of any New England economy.

The FAF analyzes commodities flows between regions, by industry, by commodity, and by mode. It found that both in the present and in the future, more cargo tonnage in Massachusetts is internal than inbound or outbound, and more value is inbound than in the other categories.

Massachusetts imports more goods than it exports, making it similar to New Hampshire and New York but dissimilar from Vermont and Connecticut, as shown in Figure 3.3.

Figure 3.3 Commodity Value (2015) for Massachusetts and Bordering States



Source: FHWA Freight Analysis Framework Version 4

Industry

The U.S. Cluster Mapping Project (US Department of Commerce Economic Development Administration (EDA), Harvard Business School) conducts an employment-based analysis of industries that catalyze and support each other and therefore benefit from close proximity. It has identified 51 such clusters.

Figure 3.4 shows the industries in which Massachusetts is ranked in the top 10 in employment among states.

Figure 3.4 Cluster Rankings for Massachusetts among US States (2014 employment)

Industry	In US, MA is
Education and Knowledge Creation	4th
Information Technology and Analytical Instruments	4th
Fishing and Fishing Products	4th
Jewelry and Precious Metals	6th
Biopharmaceuticals	7th
Performing Arts	7th
Recreational and Small Electric Goods	7th
Financial Services	8th
Marketing, Design, and Publishing	8th
Communications Equipment and Services	9th
Medical Devices	9th
Video Production and Distribution	9th
Footwear	10th
Apparel	10th

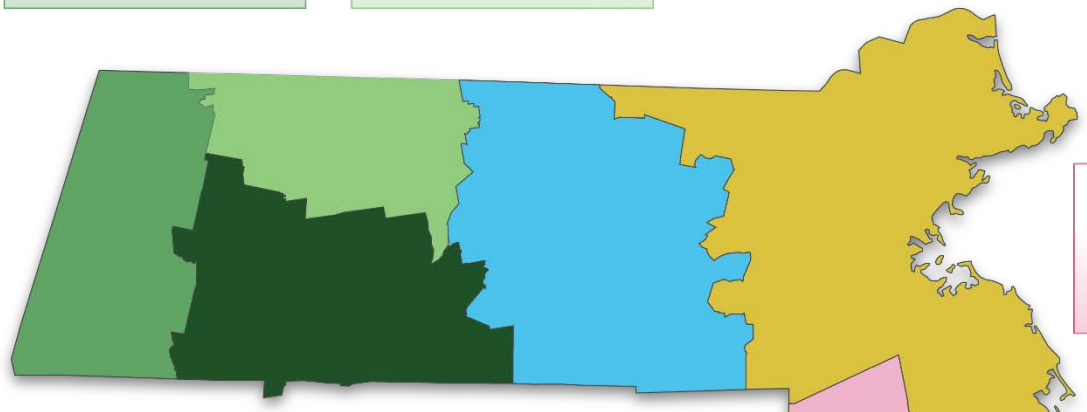
Source: US Cluster Mapping Project

Figure 3.5 (next page) contains the same information for the Commonwealth's Metropolitan Statistical Areas (MSAs), as they rank among MSAs nationwide in employment. The figure shows the top 3 industry clusters for each. Note that a ranking of 100 would place an MSA in the top 11% of all clusters in the nation.

The interviews conducted to support this plan generated a critical set of industry-specific insights, concerns, and needs.

- **Institutions** are seeing more e-commerce, buy lots of food and beverage, produce lots of waste, and have their own construction seasons. In urban areas, truckers have issues with urban geometries and congestion when delivering materials and foods. Logistics for universities are seasonal.
- **Biopharmaceuticals** are typically manufactured out-of-state with the research and development performed in-state by an expensive, highly-skilled workforce. These companies tend to make small shipments of drugs on an ad hoc basis, targeted for clinical trials. They do take multiple daily shipments of lab equipment.
- **Fuel** for eastern and central Massachusetts arrives by pipeline into Braintree or into ports in Chelsea and Providence and for western Massachusetts it is trucked from the Port of New Haven and the Buckeye pipeline in the Springfield Area (several locations). The fuel supply chain is vulnerable to disruption from flooding.
- **Food** is delivered from regional distribution centers and is also becoming more locally-sourced. Increasing urban populations and land prices may lead retailers to increase turnover in urban locations, perhaps requiring more frequent deliveries with smaller vehicles.

Figure 3.5 Cluster Ranking for Massachusetts Metropolitan Areas



PITTSFIELD
Jewelry – 42nd
Footwear – 80th
Education – 126th
...of 917

GREENFIELD
Electric Goods – 46th
Apparel – 159th
Video Production – 227th
...of 917

BOSTON
Education – 2nd
IT/Analytics – 3rd
Fishing – 3rd
...of 917

BARNSTABLE
Fishing – 85th
Biopharma – 122nd
Finance – 139th
...of 917

SPRINGFIELD
Education – 41st
Electric Goods – 56th
Medical Devices – 58th
...of 917

WORCESTER
Education – 46th
IT/Analytics – 47th
Biopharma – 51st
...of 917

PROVIDENCE
Fishing – 2nd
Jewelry – 2nd
Metal Products – 8th
...of 917

MARTHA'S VINEYARD
Jewelry – 127th
Music Recording – 167th
Water Transport – 214th
...of 917

Source: U.S. Cluster Mapping Project.

Policy and Regulation

A complete summary of policies and regulations on the freight system can be found in *Technical Memorandum 1: Background Review*. The interview and public sector workshop process generated some suggestions for how MassDOT could improve on its policy and regulatory stance:

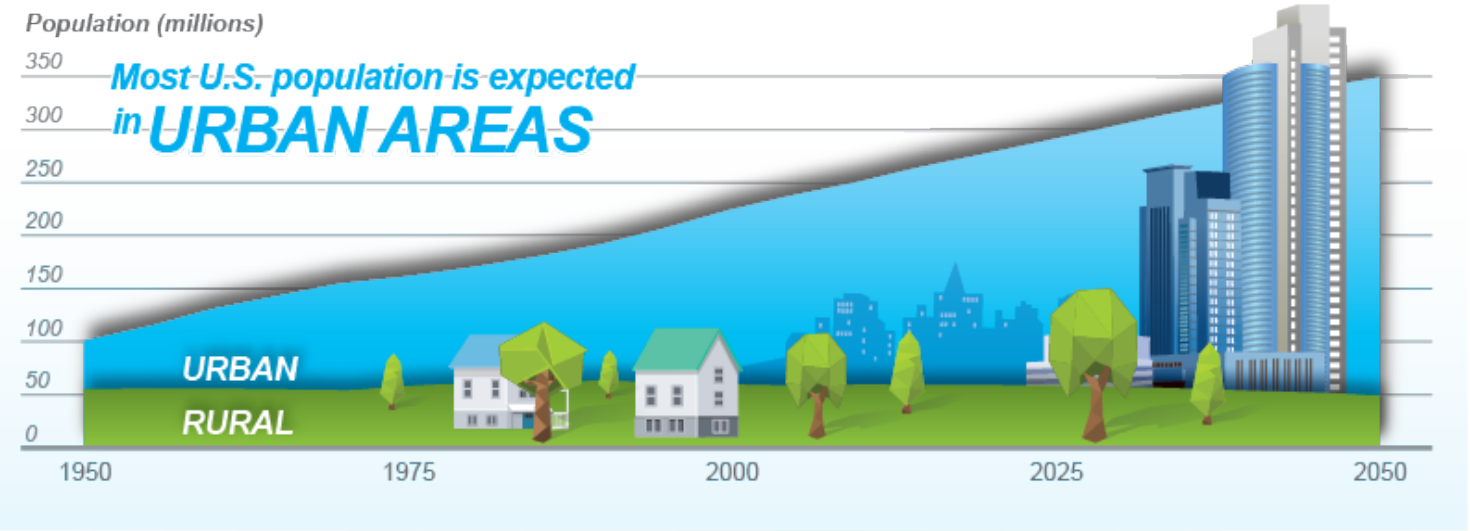
- Some users experienced challenges in Massachusetts when transferring, acquiring, and renewing commercial drivers' licenses for truckers.
- Trucks with wide or heavy loads require special permits to move those loads on MassDOT roads. Some users reported challenges with this oversize/overweight (OS/OW) permitting, including institutional issues with operating on the Massachusetts Turnpike (duplicate escorts and permits), repeated need for structural bridge analysis, and barriers to transferring permits among states.
- Fuel trucks are required to take a long diversion around the City of Boston due to restrictions on through routes.
- Many system users said that MassDOT must preserve truck access to South Boston, Chelsea, and Everett on dedicated roadways. It has been suggested that existing dedicated haul roads be opened to general traffic to relieve congestion in these developing neighborhoods.

3.2 Drivers of Global Change

The world is changing quickly, and Massachusetts must be flexible and resilient in responding those changes. The National Cooperative Highway Research Program's *NCHRP Report 750 Foresight Series* relies upon expert opinion to develop an idea of what the future holds:

- **What unique factors must be considered?** Massachusetts has developed an important cluster of innovative industries largely because of its supply of workers with postsecondary and advanced degrees. The Commonwealth has economic centers and transportation facilities located at low elevations and adjacent to the ocean, placing them at risk from sea level rise and storm flooding.
- **What are the drivers of global change?** A driver is a catalyst and influencer of world events across demographic, economic, and political realms.
- **What are the possible outcomes for each driver?** For each driver, this plan considers multiple potential trends. It does not include "good" or "bad" alternatives, but rather plausible ones for which Massachusetts should be prepared.
- **What are the plausible futures that should be considered?** The multiple trends for each driver can be combined into plausible futures in which they interact.

Some sources that informed our understanding of drivers and trends are shown in Figure 3.11. The trends are illustrated in Figures 3.6 through 3.10.



Sources: Anthony Wirth and Marc Rasmussen: "US Urbanization Trends: Investment Implications for Commercial Real Estate." CBRE Global Investors, 1/2015.

Mitchell, M Roschelle , Kathleen B. Carey, et al, "Emerging trends in Real Estate 2016." Urban Land Institute and PWC, 2016.

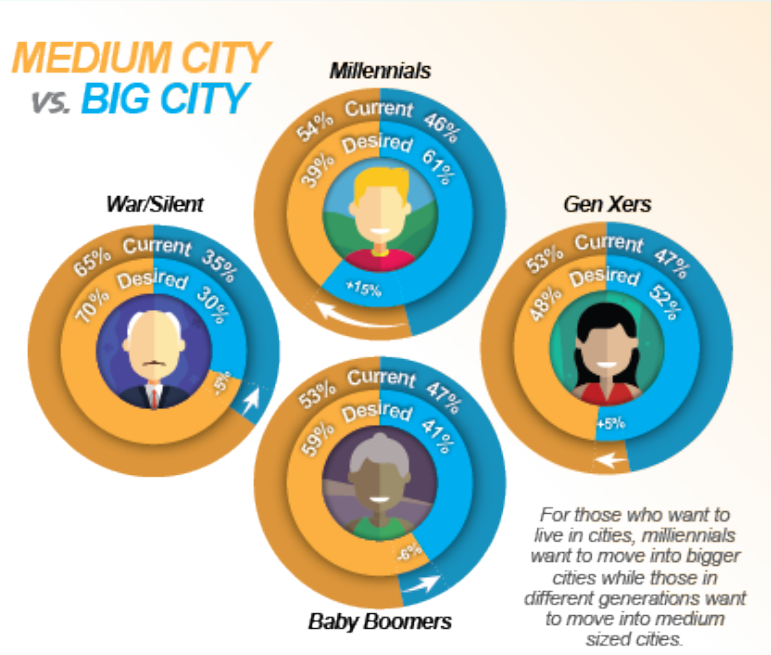
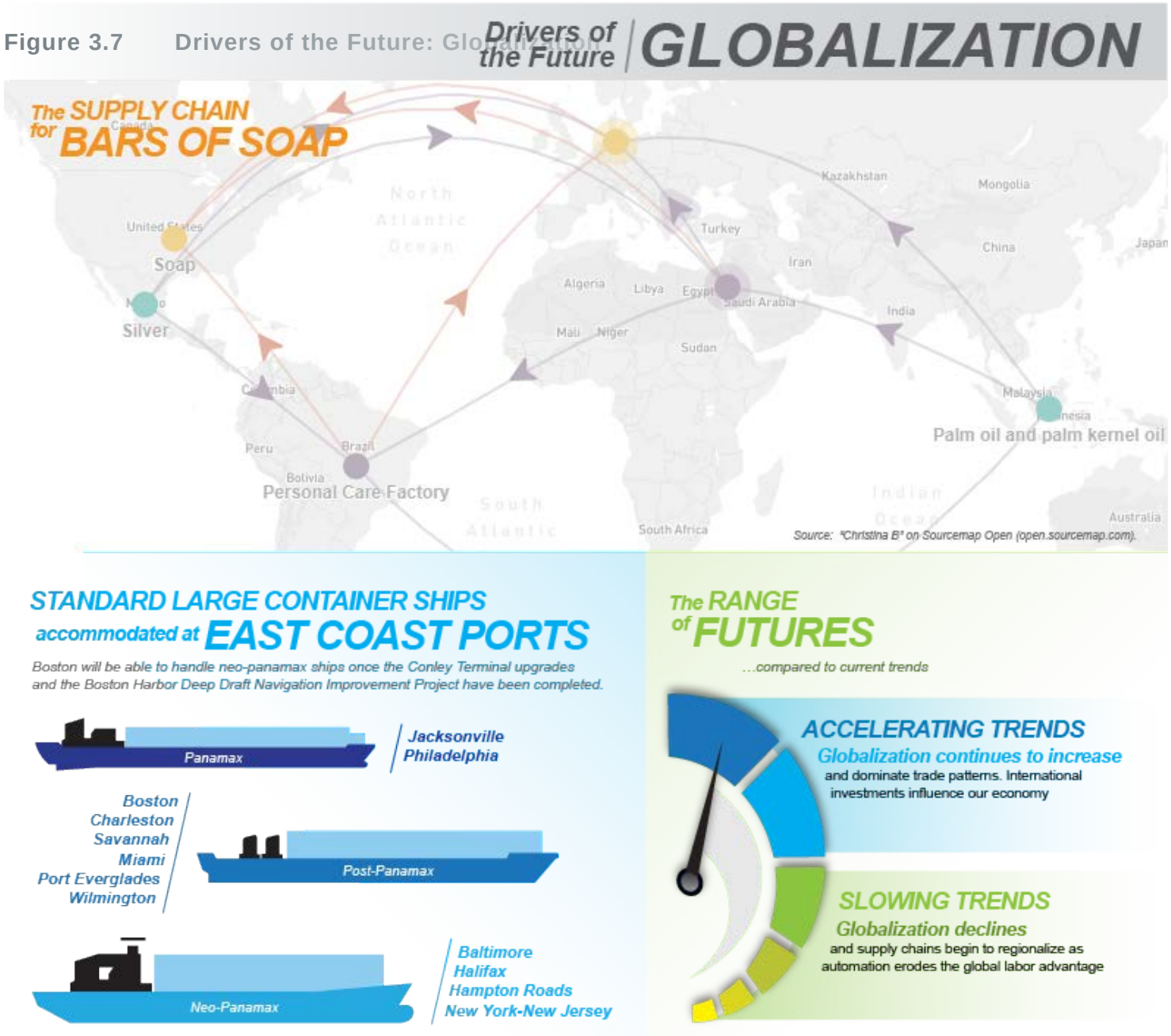
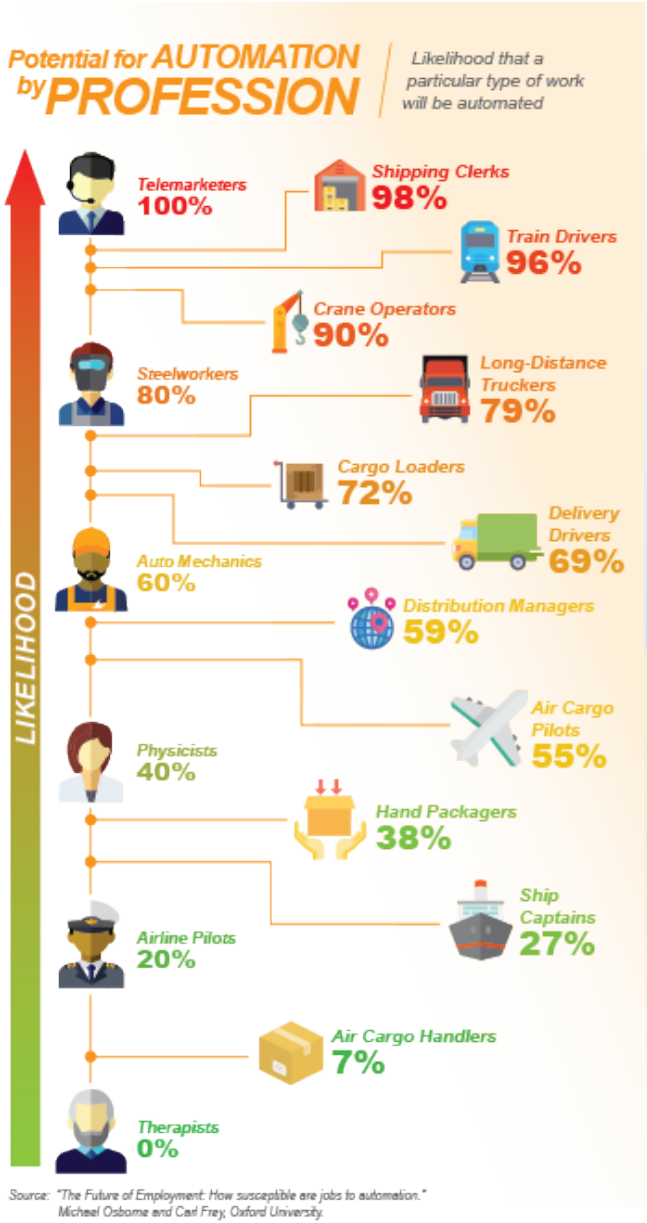


Figure 3.7 Drivers of the Future: Globalization



Source: Dr, Jean-Paul Rodrigue, Hofstra University.


Potential for AUTOMATION by PROFESSION
Likelihood that a particular type of work will be automated
LIKELIHOOD
Telemarketers 100%
Shipping Clerks 98%
Train Drivers 96%
Crane Operators 90%
Steelworkers 80%
Long-Distance Truckers 79%
Cargo Loaders 72%
Delivery Drivers 69%
Auto Mechanics 60%
Distribution Managers 59%
Air Cargo Pilots 55%
Physicists 40%
Hand Packagers 38%
Ship Captains 27%
Airline Pilots 20%
Air Cargo Handlers 7%
Therapists 0%
Source: "The Future of Employment: How susceptible are jobs to automation." Michael Osborne and Carl Frey, Oxford University.

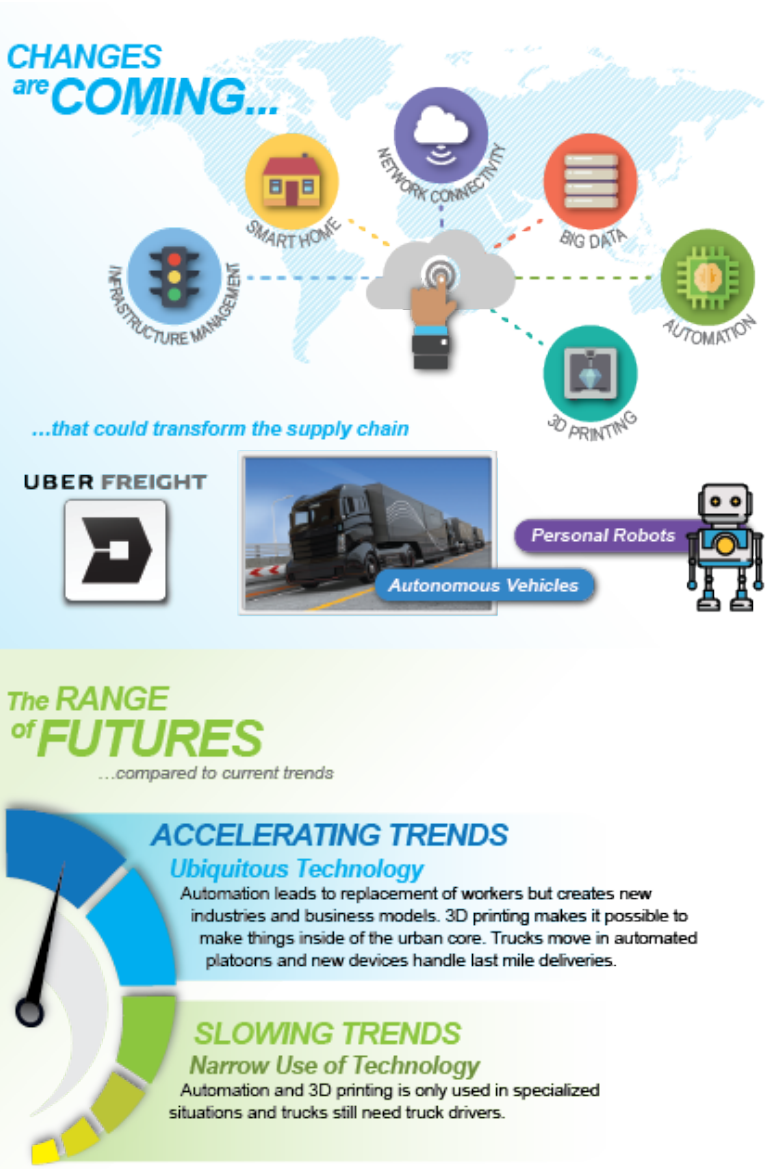

CHANGES are COMING...
NETWORK CONNECTIVITY
SMART HOME
BIG DATA
INFRASTRUCTURE MANAGEMENT
AUTOMATION
3D PRINTING
...that could transform the supply chain
UBER FREIGHT
Personal Robots
Autonomous Vehicles
The RANGE of FUTURES
...compared to current trends
ACCELERATING TRENDS
Ubiquitous Technology
Automation leads to replacement of workers but creates new industries and business models. 3D printing makes it possible to make things inside of the urban core. Trucks move in automated platoons and new devices handle last mile deliveries.
SLOWING TRENDS
Narrow Use of Technology
Automation and 3D printing is only used in specialized situations and trucks still need truck drivers.

Figure 3.9 Drivers of the Future: Knowledge

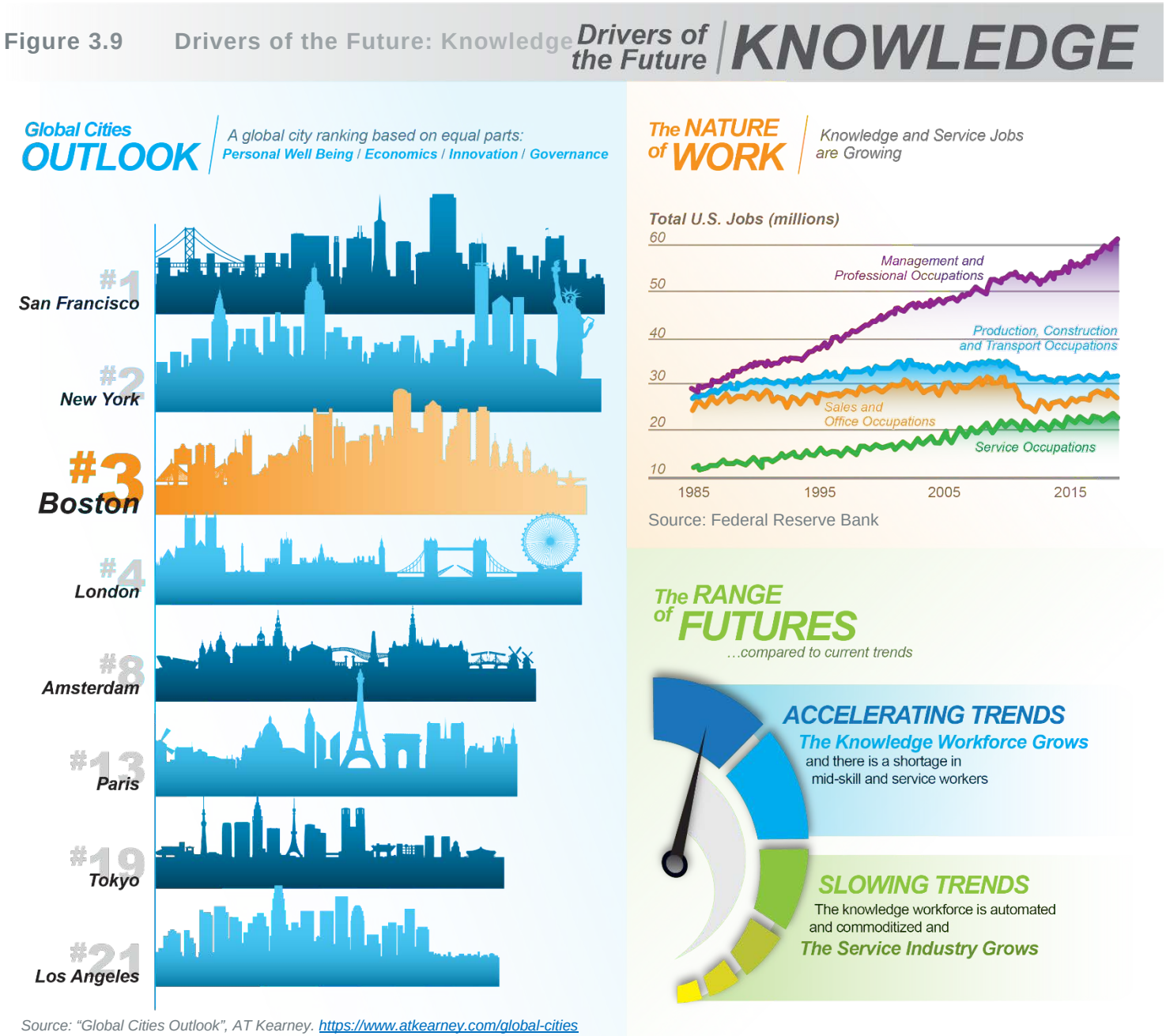
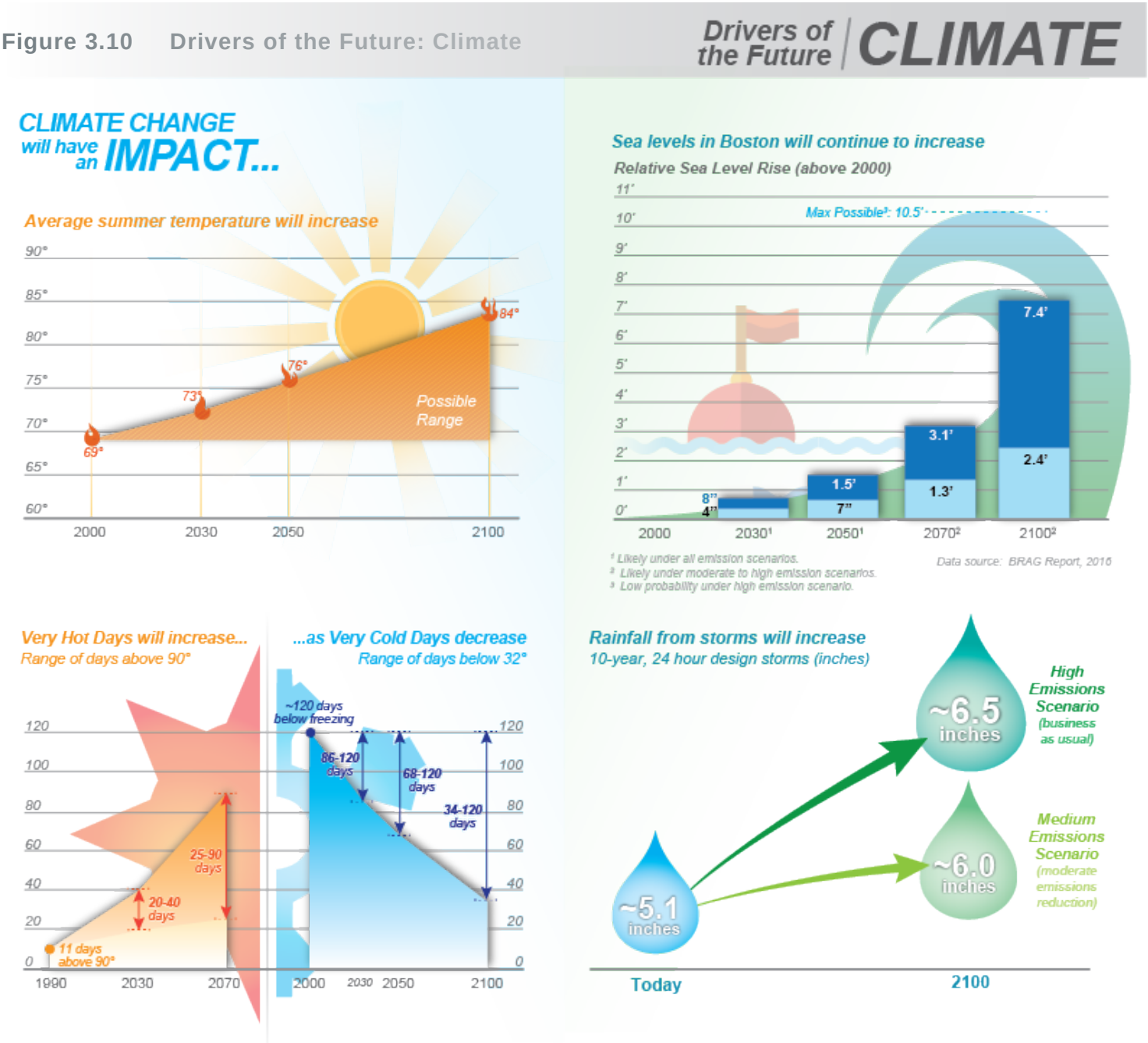
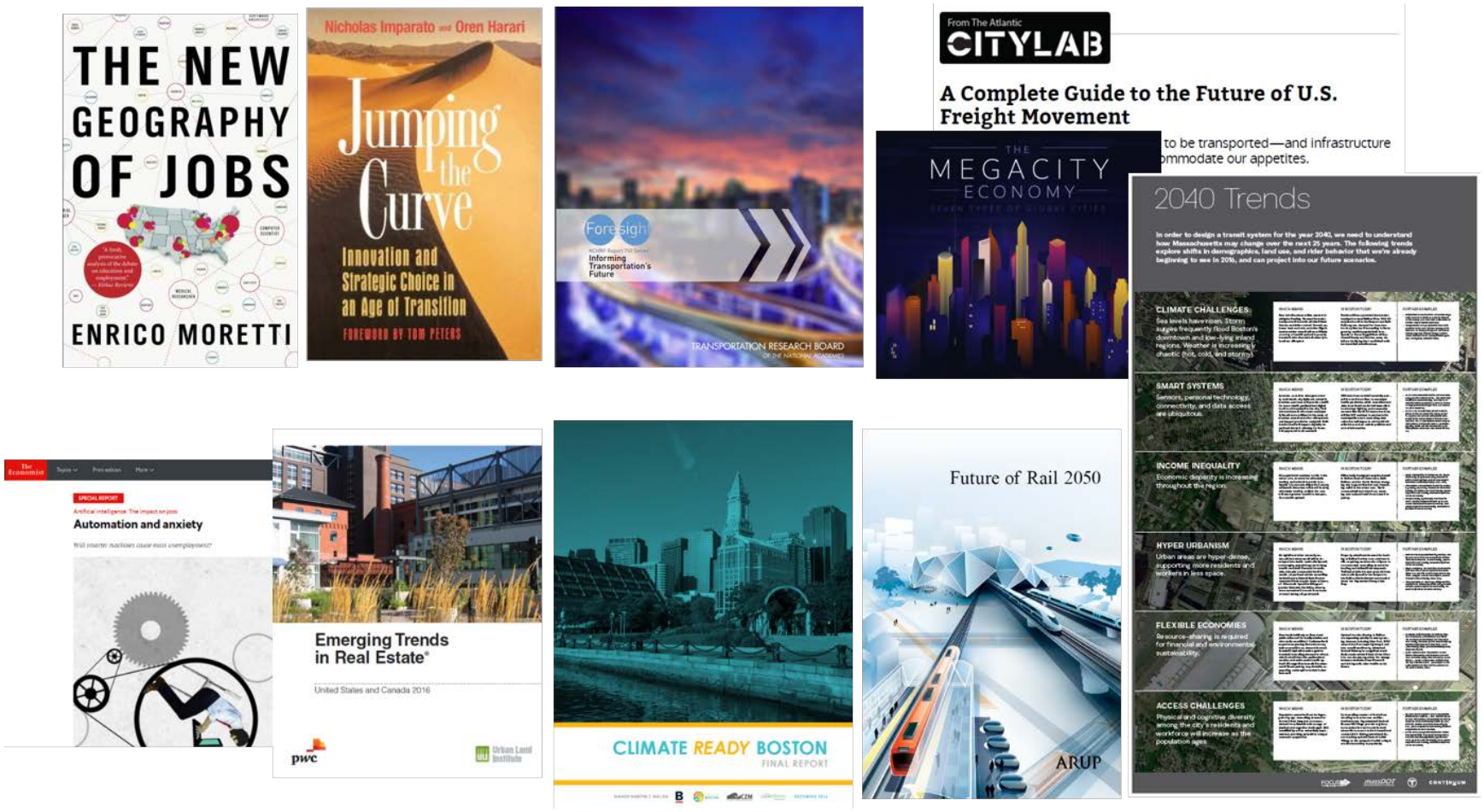


Figure 3.10 Drivers of the Future: Climate



Source: *Climate Ready Boston*

Figure 3.11 A Selection of the Sources Used to Develop Drivers of Future Change



3.3 Plausible Futures

The Massachusetts Freight Plan prioritized its recommended strategies using a qualitative Robust Decision-Making (RDM) process. The principle behind RDM is that the future has many plausible shapes. To account for this uncertainty, one should pursue "robust" strategies and actions – those that work in the widest range of possible futures.

This contrasts with traditional planning, in which trends are either assumed to be constant or are generated through educated guesswork. The peril of planning based on a single forecast is that, if the "most likely" future fails to occur, investments may be less effective, ineffective, or even counter-productive. There is also an opportunity cost – investing in the wrong solutions implies that not enough was invested in the right ones.

RDM defines success not as predicting the future accurately, but as pursuing a strategy that is productive and appropriate even if events do not proceed as expected and that adapts as trends become clear.

The plausible futures developed for this plan do not represent "good" or "bad", "success" or "crisis". They are what happens if the drivers described in this chapter follow recent trends, accelerate, or see current trends plateau and reverse. All of these futures assume that **climate change continues, so Massachusetts will need to pursue adaptation strategies regardless of what occurs with the other drivers.**

These futures were selected to represent a range of possibilities.

Commonwealth Quo

Commonwealth Quo is a future in which urbanization accelerates and the status quo remains in other drivers. Massachusetts city centers grow rapidly in population and employment, while suburbs and exurbs plateau or grow more slowly. Increasing real estate prices continue to drive a development boom but limit the ability of new labor to move to Massachusetts. The same forces place strong pressure on light industrial and distribution to move out of urban cores.

Globalization plateaus and potentially begins to recede, as manufacturing moves gradually back to the United States. This reduces demand for international sea shipping, which is already suffering from oversupply.

New freight-related technology fills important but niche markets. 3D printing is used to manufacture some products at the point-of-sale and even in private homes. Automated driving and artificial intelligence have a presence in urban areas for short-distance deliveries (rolling drones on the sidewalk, ridesharing) and need to be accommodated by piloted vehicles, pedestrians, and bicycles.

Massachusetts's advantages as a "knowledge capital" continues to build, with its colleges and universities educating the best and brightest of many nations, creating an inward flow of expertise and strengthening the innovation economy.

Innovation Acceleration

Innovation Acceleration is a "spiky world" future in which technology, globalization, and the knowledge economy drive an economic boom in well-equipped cities but provide limited benefits for others. Boston, with an innovation cluster, colleges, and universities sees a boom, but the Commonwealth's suburbs, exurbs, and "gateway cities" struggle unless they are college towns (e.g., Lowell and Worcester).

Through a combination of globalization and automation, most manufacturing jobs in the United States are eliminated. Shipments will arrive via ship, airplane, and potentially airship, stressing the urban road networks and neighborhoods that surround these facilities in Boston, New Bedford, and elsewhere.

Automation largely displaces the trucking workforce and its members require government support to educate themselves in professions and industries created by new technology. Automated trucks travel in platoons and require MassDOT to invest heavily in intelligent transportation and support systems on freight corridors – but they obviate the need for truck stops and truck parking.

Consumer goods are largely 3D printed at "micro-manufacture" shops in urban areas. These business still require large shipments of raw materials, so communities are smart to invest in rail and highway access.

Picket Fences

Picket Fences is a future in which urbanization and globalization plateau, while technology and knowledge continue to develop as they have in recent years. The migration to suburban and exurban areas from city centers is driven by concerns about schools, commute times to still-thriving office parks on Route 128 and I-495, desire for open space, and cost.

A spread-out population drives e-commerce and automated vehicle implementation (since it is easier to automate in a standardized, predictable environment). Electric cars are the dominant mode of transportation. Congestion pricing becomes necessary as demand increases. Telepresence becomes more practical.

Large distribution centers are necessary in rural and exurban communities. Communities are challenged to prepare for impacts in policy, zoning, bylaws, and infrastructure.

Globalization goes into retreat, with significant manufacturing returning to the United States. Large numbers of products that used to arrive by ship from China and Southeast Asia arrive by train or short sea ship from domestic factories. Heavy traffic challenges neighborhoods around intermodal rail and limited capacity at those facilities drives goods to trucking and adds large vehicles to congested highways over long distances.

3.4 Massachusetts and the Future

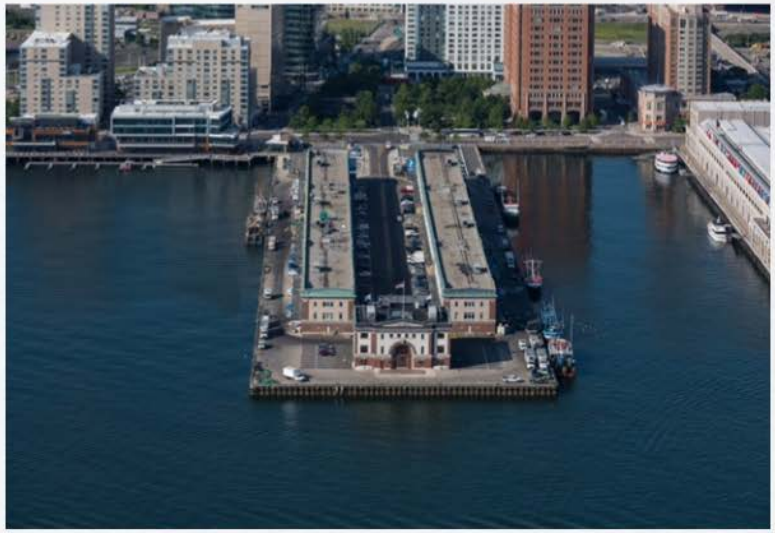
It is important to differentiate the Commonwealth's unique concerns from those of the nation as a whole, or from individual families. Because Massachusetts has an economy focused on urban offices, knowledge, and supporting services, growth in these sectors presents different opportunities than their plateauing or decline. That this is true at the State level does not imply that urbanization is "good" and de-densification is "bad", merely that Massachusetts is better positioned to benefit from the former than from the latter.

With this in mind, strategies in this freight plan should address not only the three plausible futures described above but others as well. The three discussed stand in for an infinite range of possible outcomes. The key is to develop *robust* strategies that are strong investments of time and money regardless of what is coming, so that the Commonwealth continues to thrive.

Freight Focus *on The Seafood Supply Chain*

The seafood industry has undergone a transformation in recent years. Where once fish were offloaded, processed, and shipped out at a single dockside location, the processing of fish from many disparate ports can now occur at centralized locations.

Massachusetts hosts fish processing hubs in Boston and New Bedford. Fish are landed at both locations, but they are also trucked there from other New England ports and flown in from the US West Coast and Iceland, among other sources. Once processed, 75% of fish processed in Boston is exported from the US.



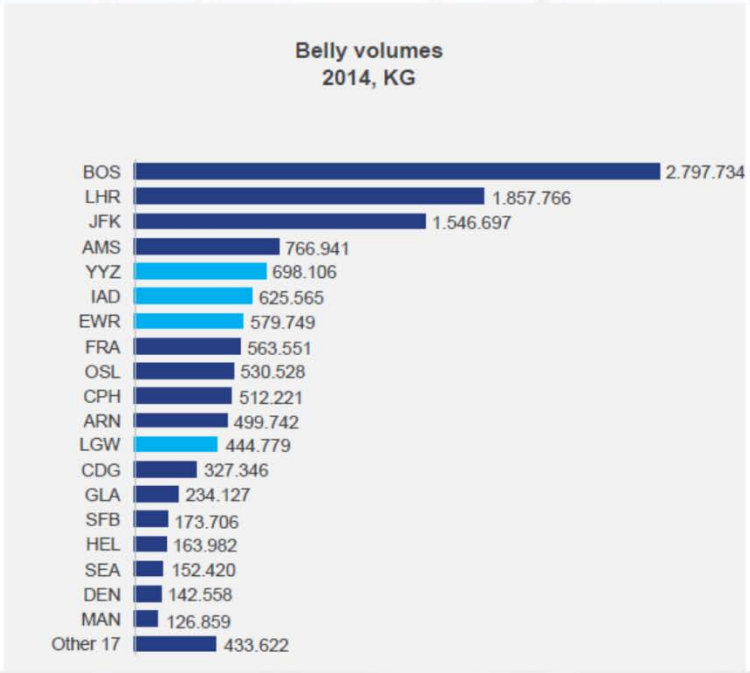
Seafood is extremely valuable by its weight and highly perishable. While some can be transported by refrigerated container via ship, rail, and truck, much of it travels to and from Boston's Logan International Airport in the luggage hold of passenger airliners, a practice referred to as "belly freight." Because fish is high-value, it has made direct flights from Boston to Tokyo, Beijing, and Reykjavik desirable for airlines.

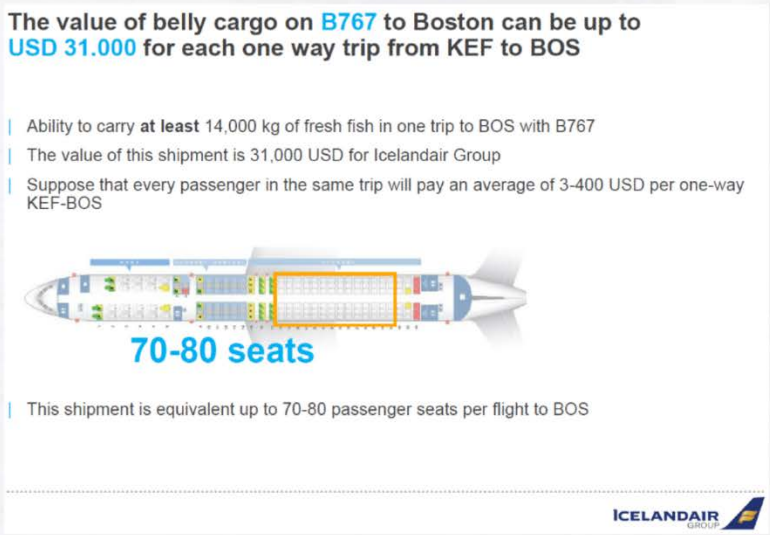
Fish, of course, have company on these flights. Direct international flights improve the competitiveness of key Massachusetts industries and institutions. A healthy fish processing industry on the South Boston Waterfront and in New Bedford has significant benefits for all residents and for the Commonwealth at large.

Freight Focus *on The Seafood Supply Chain*

The scale of fish processing accessible through Logan Airport (in Boston and New Bedford) is not notably only to Massachusetts residents and officials. Icelandair Cargo reported to its stakeholders in 2014 that Boston's belly cargo was the highest by weight in its network of 36 cities.

As the airline illustrates at right, the weight of fish shipped to Boston exceeded that shipped to second-ranked London by nearly 1 million kilos (approximately 1,000 tons). This compared to the total 2.8 million kilos (just over 3,000 tons) of fish shipped by Icelandair to Boston in 2014. Boston also exceeded the tonnage of all NYC airports combined.





The importance of Boston in Icelandair's cargo network has implications for the passenger market. The airline notes that in 2014 it made $31,000 per flight to Boston (on a Boeing 767) from fish alone, the equivalent of 70-80 passengers, or the portion of the aircraft outlined in gold on the slide at left. Put a different way, fish subsidize people on some of Logan Airport's international flights, and there may be a market for direct "fish flights" to other Massachusetts port cities.

Source: https://www.icelandairgroup.is/servlet/file/store653/item813507/version1/05%20Gunnar%20M%C3%A1r%20Sigurfinnsson.pdf

4.0 Recommended Strategies

FHWA defines three categories of strategies for state freight plans: infrastructure improvements, operational innovations, and policies. This plan expands the final category to "policies and people" to emphasize the human element of the freight system: to recognize the importance of the workforce and the community and to align with MassDOT's focus on customer service.

Strategies were taken from several sources:

- MassDOT priorities, as documented in Section 1.2.
- Priorities for Massport, MPOs, Commonwealth agencies, and municipalities, as established by those organizations.
- Industry priorities and suggestions, gathered through 25 interviews and the Freight Advisory Committee (FAC).
- Best practices from FHWA, other states, municipalities, and academia.

To categorize the strategies, FAC members took part in a survey on whether the strategies would be appropriate for each of the plausible futures. Based on these results and the established priorities of FHWA, MassDOT, Massport, the Commonwealth of Massachusetts, strategies were grouped into five categories. MassDOT provided final review of the categories.

This section lists the strategies in each of the following prioritization categories separately:

- **Immediate Strategies** address a current or near-term need. They are worthwhile ideas today, no matter what the future holds. *For example, improving the condition of freight system assets.*
- **Robust Strategies** address issues that are expected to arise in the future but should be appropriate no matter what the future holds. *For example, mitigating climate change impacts on infrastructure.*
- **Hedging Strategies** might not be needed, but if they are needed we'll need to have started implementing them now. *For example, building right-sized distribution centers inside of Route 128.*
- **Shaping Strategies** allow Massachusetts agencies to influence – and hopefully direct – trends for the future. *For example, increasing the use of underutilized gateways.*
- **Deferred Strategies** might be necessary, but it is safe to wait and see what happens. *For example, installing standardized package drops at homes.*

This process allows for Massachusetts to accommodate the risk that the future does not reflect the status quo, a continuation of current trends, or any other speculation – however educated – made by planners in 2017.

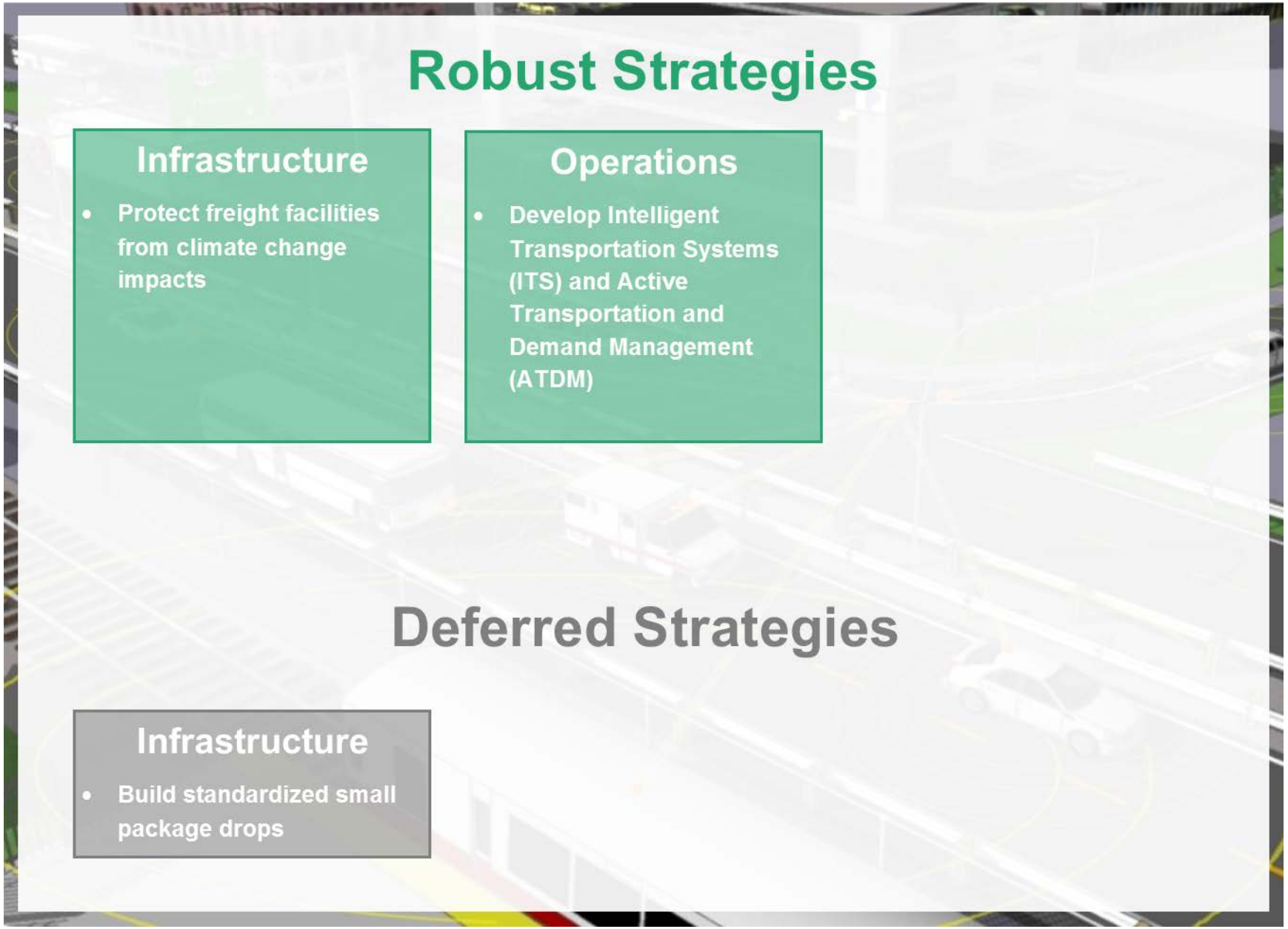
Immediate Strategies

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, seaports, 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 CO_2 emissions from all freight vehicles
- Harmonize oversize/ overweight permitting across New England
- Coordinate with freight planning in neighboring states


Robust Strategies
Infrastructure
• Protect freight facilities from climate change impacts
Operations
• Develop Intelligent Transportation Systems (ITS) and Active Transportation and Demand Management (ATDM)
Deferred Strategies
Infrastructure
• Build standardized small package drops

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 sites 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 in 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 loading into their planning and zoning and land use decision-making processes
- Encourage private industry to adopt short-sea shipping

4.1 Immediate Strategies

Infrastructure Improvements

Improve the condition of freight network assets

MassDOT currently tracks the condition of its highway pavement, bridges, tunnels, and signage through inspections and FHWA reporting. Further, MassDOT has significant records of the condition of rail track, right-of-way and bridges. From this data, MassDOT reported in 2016 that 444 of its roughly 5,200 highway bridges (9%), 2% of its lane-miles of Interstate pavement, and 13% of its non-Interstate pavement are in "poor" condition. It considers truck traffic when developing investments.

Continued investment to improve the state-of-good repair of these assets – to inspect them, inventory them, and ensure that a minimal number of them are in "poor" condition – aligns with MassDOT's first investment priority. While MassDOT places its first priority on reliability when making capital investments, it is always possible to do more and to do better.

Pursuing this strategy may involve:

- Creation of a feedback mechanism for industry to report infrastructure issues that significantly impact their business (bridge weight limits, for example).
- For MassDOT-owned assets, inclusion of a priority boost into project selection tools for assets and projects located on the National Multimodal Freight Network.
- For locally owned assets, inclusion of a priority boost into Chapter 90 and Municipal Bridge Program selection processes for assets and projects located on the National Multimodal Freight Network.
- Completion of inventory and asset management program for all MassDOT-owned freight rail lines.
- Consideration of heavy truck traffic as part of the asset condition project selection process.

Build or expand truck stops on primary truck routes

The lack of adequate rest and service facilities for trucks along major corridors threatens both the efficiency and the safety of the freight system. Because truck stops are typically privately operated, public-private partnerships between these operators and multiple levels of government may be necessary to develop new facilities.

The Boston MPO's 2016 memorandum on this subject – *Rest Locations for Long-Distance Truck Drivers in Massachusetts* – provides detailed background and recommendations, including narrative of what driving and resting in the Commonwealth is like from a driver's perspective.

Pursuing this strategy may involve:

- Collaboration between State, local, regional, and multistate authorities to locate appropriate properties on primary truck routes.

- Collaboration between State, local, regional, and multistate authorities to manage zoning, permitting, taxation, traffic, and other logistical and quality-of-life issues.
- Public-private partnerships between State and local authorities and private truck stop operators to defray the risk of opening facilities.
- Development of smartphone apps and variable message signboards to allow drivers to view available spaces, reserve spaces, and receive directions.

Upgrade rail lines to the 286K standard

Freight rail traffic in Massachusetts would be significantly more efficient if key lines were upgraded to the national 286K weight standard. In the long-term the owners and customers of those key lines would also benefit from further increases to the 315K weight standard.

Pursuing this strategy may involve:

- Massachusetts agencies collaboratively prioritizing rail lines for 286K upgrades and developing a medium-term (10-year) plan for completion of the work.
- Investments by MassDOT on its own lines and those owned by others (through grants, public-private partnerships, or other means) to replace deficient bridges and culverts and to improve track and right-of-way where necessary to achieve a 286K rating.

Resolve key bottlenecks on highways

Chapter 2 discusses key highway bottlenecks as required by FHWA, as well as by the Commonwealth's stated priorities. MassDOT has studied a project to address capacity and efficiency issues at I-95/I-93 in Reading. The other three major bottlenecks are constrained by dense urban development and significant recent investment (the I-90 and I-93 tunnels were built in the past two decades). MassDOT is working to invest in the I-495/I-90 bottleneck, which falls along the path of the east-west freight spine.

Pursuing this strategy may involve:

- Management and operations improvements, including striping and intelligent transportation systems (ITS). MassDOT has experimented with restriping congested freeway interchanges to reduce weaving and conflicts and to streamline traffic flow.
- Low-cost modernization of interchanges, including geometry improvements and ramp realignments.
- Higher-cost modernization and reconstruction projects.

Maintain uncongested freight access to airports, seaports, and rail terminals in mixed-use urban settings

The major port gateways to Massachusetts are all located in dense and developing urban neighborhoods in East Boston, South Boston, Chelsea, Everett, and New Bedford. Their location inherently leads to conflicts between the needs of truck traffic and the needs of motorists, but the challenge has become

especially acute in the South Boston Seaport/Innovation District, which has become a booming mixed-use development area.

Increasing congestion has become one of the principal obstacles to the Seaport District reaching its enormous potential as an economic driver. Consequently, the Commonwealth, MassDOT, Massport, and the City of Boston have recently begun to consider various changes to the traffic system in the area, and Massport has opened a new first/last-mile freight connection (the Thomas J. Butler Haul Road) to improve the connection between the Port and the Interstate System.

The ability to move freight through the area in a timely manner is critical to the continued success of port operations. Conley Terminal currently has efficient access to the Interstate highway system and along the freight spine between Boston, Worcester and points west. In order to ensure the continued health of its dominant port, Massachusetts must preserve existing truck routes and enhance truck connections to ensure that trucks can continue to access the terminal efficiently.

Pursuing this strategy may involve:

- Educating officials, the business community, and the public of the benefits of port access for trucks.
- Limiting or monitoring general use of existing access and haul roads in South Boston and East Boston.
- Collaborating with MassDOT, Massport, the City of Boston, and the Massachusetts Convention Center Authority (MCCA) to improve connections between South Boston and the Interstate Highway System by building the Cypher-E Freight Corridor to serve Conley Terminal and other maritime and industrial businesses in the Port of Boston.
- Accounting for the needs of trucks when designing the infrastructure and operations (signal timing, etc.) on streets adjacent to major port facilities in Boston, Chelsea, Everett, and New Bedford.
- Leveraging the Massachusetts Skills Gap Grant Program in supporting vocational education.

Modernize container terminal facilities

As part of the strategy to revitalize the Port of Boston, Massport and the Commonwealth are investing to deepen Boston Harbor and to modernize Conley Terminal to better serve the large container ships that are already calling the Port of Boston, and the even bigger ships expected in the future. With the help of a $42 million FASTLANE Grant, projects are underway to repair, rehabilitate and deepen existing berths, construct new in and out gate facilities, enhance terminal technology, and expand the storage area for refrigerated containers. In addition, Massport is planning to build a new 50-foot berth and procure larger cranes.

Pursuing this strategy may involve:

- Pursuing additional funding sources, including Federal grants and possible private sector investment.

Policies and People

Develop a workforce strategy for freight professions

The aging/retirement of skilled technical labor across all freight modes and professions (rail, marine, air cargo, logistics and supply chain management, etc.) and a lack of recruitment among young people has been identified consistently as a crisis facing supply chains across the United States – ATRI's annual industry survey named it as one of the top 10 challenges facing trucking in 2016. Its causes include:

- A Federal requirement that a person be 21 to receive a commercial driver's license (CDL), without the opportunity for provisional licensure. This effectively renders trucking off-limits as a profession to young people who chose not to attend college, the demographic that will likely produce the most truck drivers.
- A lack of access to training courses and career advising for young people considering freight professions. None of Massachusetts's 27 vocational/technical high schools currently offer a program in transportation or logistics.
- An increasing expectation that young people will obtain a college degree – logistics professions are seen as blue collar and not preferable for college-educated people.

There is potential that some freight work could be automated in the future. Even so, there are real opportunities for growth of a freight workforce that focuses on skills that are less likely to be automated, such as loading/unloading and vehicle maintenance.

Pursuing this strategy may involve:

- Engaging with current transportation and logistics professionals (potentially through labor organizations) to understand what made their professions attractive to them, what support and training they had or wish they had, and what recommendations they would make for encouraging younger people to enter their fields.
- Developing exposure and training programs for freight professions, potentially with vocational/technical high schools, but also potentially through financial and logistical partnerships with airports, seaports, labor organizations, and industry. In 2016, the Massachusetts Legislature established a program to explore partnership between industry and vocational/technical high schools to address critical workforce shortages in the automotive and diesel repair industry (Section 94, Chapter 219, Acts of 2016).
- Exploring ways in which MassDOT (through the RMV) could make the process of obtaining or transferring a CDL quicker and more reliable.
- Exploring ways in which MassDOT (through the RMV) could institute graduated commercial licensure for people under 21 without violating Federal policy.

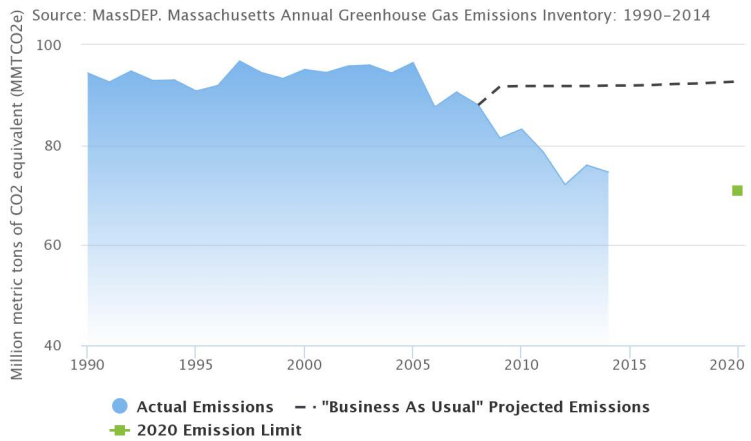
Support policies to reduce CO_2 emissions from all freight vehicles

The Massachusetts Executive Office of Energy and Environmental Affairs provides a greenhouse gas (GHG) emission reduction dashboard at:

http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/mock-up/#ghg-emissions-reductions

The 2008 Massachusetts Global Warming Solutions Act (GWSA) created a framework for reducing heat-trapping emissions to levels that scientists believe give us a reasonable chance of avoiding the worst effects of global warming. It requires reductions in GHG emissions from each sector of the economy that sum to a total reduction of 25% below the 1990 baseline emission level in 2020 and at least an 80% reduction in 2050. As of 2013, Massachusetts was making progress toward these goals, as shown in Figure 4.1.

Figure 4.1 Massachusetts GHG Emissions



Current Federal standards for medium and heavy-duty vehicles were established by DOT and the EPA in August, 2016. They are available from the EPA at:

https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-commercial-trucks

Pursuing this strategy may involve:

- Continuing to track emissions in general and from transportation in Massachusetts against stated goals.
- Considering additional measures to reduce GHG emissions should Federal policy not be projected to achieve the Commonwealth's objectives.

Harmonize oversize/overweight permitting across New England

MassDOT is improving its permitting system, but permits for a single journey must be obtained separately from each state a load will pass through, through a separate process. Data systems at these agencies cannot forward and share information, and procedures and forms are not standardized and interoperable. Standards and requirements may also vary among the states. All of these factors limit the efficiency of shipments that cross state lines.

Pursuing this strategy may involve:

- Utilize and build upon the USDOT Commercial Vehicle Information Systems and Networks (CVISN) program.

- Drawing upon professional relationships and existing regional consortia to research ways in which oversize/overweight permitting can be harmonized in neighboring states.

Coordinate with freight planning in neighboring states

All states are required to complete a freight plan under the FAST Act. The goals and objectives contained in these plans will likely be consistent, and may present opportunities for information sharing, cooperative investment, and coordination of policies, to the benefit of the freight system as a whole.

Pursuing this strategy may involve:

- Reviewing freight plans for other New England and northeastern states and identifying opportunities for cooperation in reaching common goals.
- Identification of key multi-state freight corridors for cooperative study and collaborative support.
- Continue New England Regional Freight (NERF) meetings.
- Notification of potential cross-state impacts of freight-related projects (a freight village located on a border, for example, or a project at a port that sees demand from multiple states).

4.2 Robust Strategies

Infrastructure Improvements

Protect freight facilities from climate change impacts

Impacts of these changes on the Massachusetts freight system could include:

- Tidal and storm flooding of coastal transportation facilities, including port facilities that supply Massachusetts with fuel and the New England Produce Center. Logan Airport and key Boston roads are also at risk.
- Storm-related flooding on inland river valleys, threatening to scour bridges and culverts that carry roadways and railways and to undermine the right-of-way.
- Changes to the profile of fuel and power needs in Massachusetts, as the winter and summer both become warmer.

Pursuing this strategy may involve:

- Completing climate resiliency plans for MassDOT, Massport and for other major public asset owners. MassDOT's reports are in-progress, while Massport's resiliency work is ongoing and the MBTA's report is complete. Cities and towns have begun to conduct climate change vulnerability studies as well.
- Coordinating with industry to develop climate change resiliency plans for key Massachusetts supply chains (fuel, for example).
- Continuing to support and publicize climate research to identify potential impacts on Massachusetts.

Operational Innovations

Develop Intelligent Transportation Systems and Active Transportation and Demand Management

USDOT in 2015 identified the following program categories in the *ITS Strategic Plan 2015-2019*:

- Connected vehicles.
- Automation.
- Emerging capabilities.
- Enterprise data.
- Interoperability.
- Accelerating deployment.

These programs are intended to enable safer vehicles and roadways, enhance mobility, limit environmental impacts, promote innovation, and support transportation system information sharing. In freight, ITS systems can be used to intelligently route trucks and guide drivers through urban areas

into parking spaces, to automate freight vehicles, and to share information among public and private organizations.

Pursuing this strategy may involve:

- Collaborating with regional and local officials, the business community, and the public to identify potential ITS strategies for implementation over a 5-10 year timespan. This could include direct community outreach at neighborhood and industry gatherings.
- Evaluating the ITS proposals that come out of the outreach process for consistency with statewide goals and developing feasibility analyses for the preferred options.
- Identifying preferred routes for long-haul automated trucking and developing feasibility analyses for operational improvements on these routes.

4.3 Hedging and Shaping Strategies

Infrastructure Improvements

Build right-sized distribution centers inside of Route 128

Amazon's strategy of guaranteeing delivery in two days, one day, or even on the same day is driving change in e-commerce. For some customers, it is no longer acceptable to take over a week to bring products from a warehouse, through a regional distribution center, and to the customer.

In order to make a significant business of very-short-term deliveries, however, goods will often be stored and processed within an urban area. As an example, Amazon has such a facility on Beacham St. in Chelsea, a Critical Urban Freight Corridor adjacent to port facilities and lined with light industrial uses. Such industrial areas are becoming less and less common, however, as urban development and population growth continues.

E-commerce is not the only business model that will benefit from urban distribution facilities. Increasing rent and land value in urban areas is making retail stores ever smaller in relation to their demand, leading to a model without a stockroom, in which all stock is on the floor. Restaurants have also begun to replace brick-and mortar retail stores in town centers.

These changes must be supported with frequent small deliveries, which will strain the supply chain if they are traveling to and from distribution centers in rural areas.

Pursuing this strategy may involve:

- Educating officials, the business community, and the public of the benefits of distribution centers in urban areas.
- Engaging with industry and with local officials to collaboratively target areas with strong road and rail connections for distribution use.
- Explore whether State agencies can provide support to local governments in building distribution centers in urban areas.

Electrify truck stops

Idling at truck stops can be a source of both emissions and noise pollution in surrounding neighborhoods. Plugging in trucks when they would otherwise be idling can prevent these impacts. Government may need to become involved both due to the upfront cost of electrification, and also because the trucking industry may not reimburse drivers for electricity used while idling as they do for diesel fuel.

Pursuing this strategy may involve:

- Researching electricity rates at different times of day to develop a cost profile for plugged-in idling (at night, the unit cost may become zero or negative).
- Reaching out to current and prospective truck stop operators to identify a small pilot study of electrification.
- Collaborating with pilot study operators to develop a business plan for electrification that is not burdensome to operators or to their customers.
- Implementing public-private partnerships to install electrification equipment and track its usage.
- Advertising the presence of electrification equipment and providing initial incentives for its use.
- Interfacing with trucking companies to encourage reimbursement of electricity costs.

Explore the electrification of railyards

Idling at railyards can be a source of both emissions and noise pollution in surrounding neighborhoods. “Plugging in” locomotives when they would otherwise be idling can prevent these impacts. Railyards are typically controlled by private railroads, but members of the public concerned about their impacts tend to contact public entities/agencies such as the Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (DEP), or MassDOT.

Pursuing this strategy may involve:

- Collaborating with the EPA and DEP to ensure that the concerns of members of the public are communicated to railroads.
- Reaching out to and collaborating with railroads to study where electrification could be implemented, how much it would cost, and how those costs would be covered.

Identify and preserve existing rural and industrial sites for warehousing and distribution development

Warehousing and distribution are considered “light industrial” use. In urban environments where light industrial is often not considered the “highest and best use” for land, and in which the traffic, noise, and emissions associated with these facilities may not be desirable for neighbors, it can be difficult to secure and preserve appropriate sites.

However, the increasingly on-demand nature of retail (e-commerce and home delivery) is creating ever-more need for

distribution facilities in close proximity to growing population centers. Furthermore, distribution centers are typically located near freeway interchanges without rail access, limiting the attractiveness of mode-shifting bulk deliveries to rail.

Pursuing this strategy may involve:

- Collaborating with industry to develop a map of areas they would like to locate warehousing and distribution, based upon access to highways and rail.
- Sharing data and expertise with interested local governments to develop a plan for maintaining selected sites for light industrial use, and for ensuring that benefits are maximized and negative impacts minimized for the community.
- Identify State-level funding sources, beyond IRAP, to assist industry and communities with preserving light industrial sites and improving their connectivity (by improving highway connectivity, for example).

Develop delivery areas in urban districts and town centers

Streets in urban areas are becoming busier and more shopping is taking place in town centers. Unlike suburban shopping centers, these neighborhood hubs do not have dedicated loading docks and delivery facilities. Consequently, trucks double-park and unload in public parking, travel lanes, bike lanes, and bus stops.

This arrangement both impedes the efficient flow of consumer supply chains and creates congestion and obstacles for all road users. Simply banning trucks from cities is not realistic, as they are required for commerce to take place in these areas.

Pursuing this strategy may involve:

- Educating officials, the business community, and the public of the benefits of loading and unloading access for trucks.
- Collaborating with local officials to document and assess the magnitude of the problems caused by informal loading in business centers and neighborhoods.
- Analyzing potential interventions, including shared loading spaces and routes in town centers, geometry improvements in areas where loading and unloading will be encouraged, or metered parking for trucks.

Encourage increased use of underutilized gateway infrastructure (ports and airports)

Currently, air cargo in Massachusetts is processed only through Logan Airport in Boston. Minor out-of-state operations exist at airports in Providence, Hartford, Manchester, and Portland, Maine. Multi-industry commercial seaport operations exist only at Boston and New Bedford.

Massachusetts has other gateway infrastructure that might be utilized better given proper incentives. Not only do the Ports of Boston and New Bedford have excess capacity and opportunities for growth, but the Commonwealth has identified

additional major ports at Gloucester, Salem, and Fall River that currently see limited service. Major seaports in Massachusetts are marked in Figure 4.2 (next page).

A greater challenge exists for air freight. Logan Airport is reducing cargo capacity even as demand continues to increase. While one solution is to build "bypass" facilities on the landside to process and sterilize goods, another option is to identify cargo reliever airports and encourage their use. Major airports identified by the *National Plan of Integrated Airport Systems* (NPIAS) in Massachusetts are marked in Figure 4.2 (next page).

Every one of these gateway facilities faces challenges if they should pursue additional utilization. The Port of Salem (and to a lesser extent Gloucester) and Worcester Regional Airport do not have strong freeway connections and are located in urban centers. Westover Metropolitan Airport (and Air National Guard Base) is relatively isolated, with strong highway and rail access and significant development potential. On the other hand, its Western Massachusetts location works against it in capturing the Boston area air cargo business, which strongly values flexible, on-demand service and short delivery and pick-up windows.

This plan makes no recommendations about air or seaport facilities not owned by Massport. However, regional facility owners and supervisors in Massachusetts should be aware of both the constraints and opportunities presented by these facilities.

Pursuing this strategy will involve:

- Completing planned structural and technological improvements to berths 10, 11, and 12 at Conley Terminal.

Pursuing this strategy may also involve:

- Engaging with industry to map demand for sea and air cargo service against access routes and existing facilities.
- Engaging with facility owners, Federal authorities, and local government to explore potential service expansions.
- Identifying incentives or infrastructure improvements that would be necessary for service expansions at appropriate facilities with willing owners and communities.

Figure 4.2 Major Airports and Seaports in Massachusetts

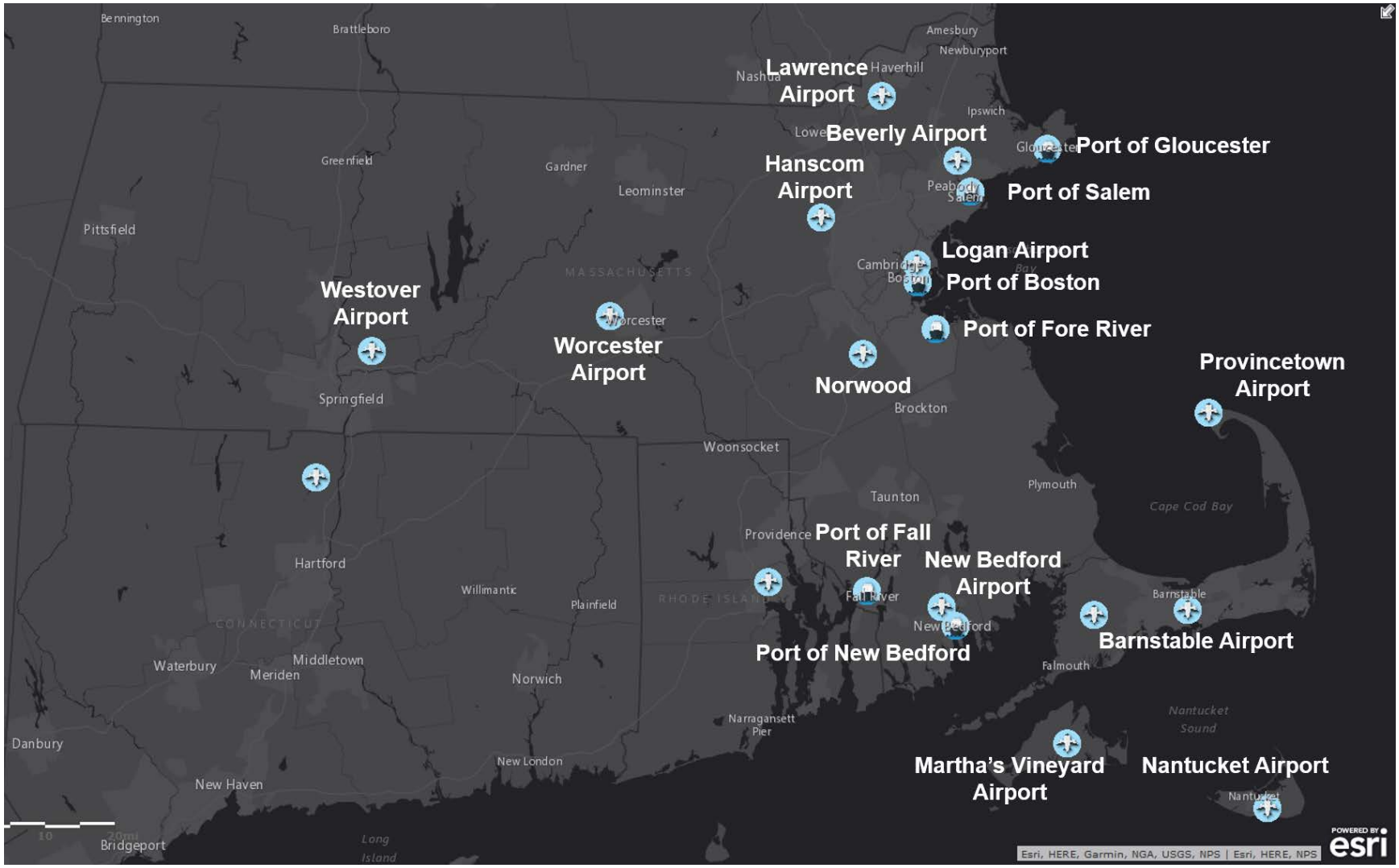


Figure 4.3 List of Major Seaports and Airports in Massachusetts

Name	City/Town	Owner
List of Major Airports		
Barnstable Municipal Airport	Barnstable	Town of Barnstable
Hanscom Field	Bedford	Massport
Beverly Regional Airport	Beverly	City of Beverly
Logan International Airport	Boston	Massport
Otis Air National Guard Base	Buzzards Bay	US Air Force
Westover Metropolitan Airport	Chicopee	Westover Metropolitan Corporation
Nantucket Memorial Airport	Nantucket	Nantucket Memorial Airport Commission
New Bedford Regional Airport	New Bedford	City of New Bedford
Lawrence Municipal Airport	North Andover	City of Lawrence
Norwood Municipal Airport	Norwood	Town of Norwood
Provincetown Municipal Airport	Provincetown	Town of Provincetown
Martha's Vineyard Airport	Vineyard Haven	Martha's Vineyard Airport Commission
Worcester Regional Airport	Worcester	Massport
List of Major Seaports		
Port of Boston	Boston	Ownership varies by individual pier facility
Port of Fall River	Fall River	
Port of Gloucester	Gloucester	
Port of New Bedford	New Bedford	
Port of Salem	Salem	
Port of Fore River	Weymouth	

Operational Innovations

Improve the efficiency of air cargo processing at Logan Airport and in the surrounding area

Air cargo that is processed at Logan Airport begins its journey through a freight forwarder. Essentially a warehouse, these companies are located near the airport in Chelsea, Everett, East Boston, and on the North Shore. Forwarders would be on-airport in many other cities, but cannot be accommodated within Logan's space constraints. Forwarders bring cargo to a facility in

one of Logan's two cargo areas – north and south – where it is processed through security and transferred to an aircraft.

Logan Airport has seen its square footage for cargo processing reduced by 50% in recent years to make space for passenger facilities. Further, the Terminal E Modernization could impact the North Cargo Area. If significant air cargo capacity is to be maintained at Logan, the operation must become more efficient to maximize the capacity of existing infrastructure.

Pursuing this issue may involve:

- Researching available priority management systems for carriers and forwarders. These could provide an appointment management system and account for perishable goods and customs restrictions and be provided to carriers and forwarders in a smartphone app.
- Considering sites near Logan Airport that could accommodate a truck parking facility to eliminate truck storage at on-airport loading doors.
- Conducting a feasibility analysis for an off-airport "bypass" facility, where goods could be received and processed before being moved to the airport in closely-managed sterile trucks.

Better integrate supply chain information to reduce administrative and regulatory delays

Supply chain information includes customs clearances, waybills, oversize/overweight permits, hazmat permits, and other permissions provided by the Commonwealth. In Massachusetts, these permits can involve multiple agencies and can be route-specific (the Massachusetts Turnpike is permitted separately from other roadways). Even when the paper trail is nominally simple, data systems may not speak to each other in a common vernacular that allows for efficient management of the system.

Pursuing this strategy may involve:

- Collaborating with regional and local officials, the business community, and the public to identify potential ITS strategies for implementation over a 5-10 year timespan. This could include direct community outreach at neighborhood and industry gatherings.

Review State regulations and practices that impact security clearance and chain-of-custody for imports and exports

Massachusetts imports a significant number of perishable goods. Customs clearance delays can result in significant loss of goods if they are left sitting at an airport, seaport, or rail yard for a significant period of time. Even for non-perishable goods, efficient customs and effective chain-of-custody tracking affects bottom lines and can alleviate security risks.

One idea that is gaining traction is "blockchain," a cloud based ledger that, according to the World Economic Forum, "cannot be duplicated, manipulated, or faked." It allows for a plain and immutable record of every transfer of custody in a supply chain. While applications to date have mostly been in banking and international finance, the US Department of Homeland Security

has experimented with the technology to secure cameras and other sensors at points of entry, and IBM has suggested its use in customs declarations to improve efficiency, reduce paperwork, and ensure trust.

Pursuing this strategy may involve:

- Engaging Massport, Federal customs officials assigned to Massachusetts, and other key international facility stakeholders to explore ways to improve the efficiency of security clearance, including automation of processes, additional staffing, etc.
- Following up on blockchain technology for supply chain management and consider whether its use could be facilitated or encouraged at the State level.

Leverage connected vehicle technology to maximize en-route efficiency

Connected vehicle technology can be applied in multiple ways to improve en-route efficiency of freight vehicles. Among them:

- Trucks can communicate with each other and with non-freight vehicles about their location and intentions, with significant safety benefits (a car in a truck's blind spot could trigger a warning in the cab or even prevent the truck from turning into it, for example).
- Trucks can be grouped into "convoys", with automated vehicles following a human-controlled lead vehicle.
- Trucks can share information, as truckers already do, concerning traffic congestion, crashes or other incidents, weather, etc. That information could either be conveyed to the driver or applied automatically (to turn on the headlights and wipers of trailing vehicles, for example).
- Trucks can report travel times along certain routes, creating the opportunity for truck-specific routing programs that account for roadway-geometry and the location of loading and delivery points.

Pursuing this strategy may involve:

- Engaging the trucking industry, the business community, officials, and the public to develop a list of potential implementations of connected vehicle technology.
- Keeping tabs on developments and research in the private sector and in academia and ensuring that information on potential technologies is shared between the Commonwealth and its industries.
- Exploring ways in which action at the State level can facilitate or encourage connected-vehicle technologies in freight.

Encourage side guards on trucks to protect cyclists

The USDOT Volpe Center in Cambridge has developed a resource page on truck side guards that is available at:

https://www.volpe.dot.gov/our-work/truck-side-guards-resource-page

During a crash with high ground clearance, vulnerable road users can fall into the exposed space between the front and rear wheels of a truck and suffer fatal crushing injuries (see Figure 4.4, next page). Side guards physically cover that space, shielding vulnerable road users from being swept underneath the truck's rear wheels. This technology can be retrofitted onto existing trucks or incorporated into new vehicle fleets.

Side guards that skirt the entire side of the truck to ground level can also provide aerodynamic benefits to fuel economy: 4 to 7% according to the EPA, equating to a **$5,000 annual fuel cost savings for a long haul truck trailer.**

Boston and Cambridge have adopted side guards for municipal fleets in partnership with Volpe.

Figure 4.4 Benefits of Side Guards

Source: USDOT Volpe Center

Pursuing this strategy may involve:

- Educating officials, the business community, and the public of the benefits of truck side guards.

- Developing a feasibility analysis of truck side guards for MassDOT's own fleet and those owned by other agencies, both for new purchases and retrofitted on existing vehicles.
- Developing a feasibility analysis of encouraging truck side guards on newly-purchased large trucks and trailers registered in Massachusetts.

Policies and People

Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution and loading into their planning and zoning and land use decision-making processes

The National Cooperative Highway and Freight Research Programs (NCHRP and NCFRP) have studied issues that arise in synthesizing freight and smart growth. The research notes that increasing freight traffic, decreasing popular familiarity with the supply chain, growth in US population (and urbanization), and downward cost pressure have contributed to a need for good neighbor policies between freight uses and host communities. The report further notes the following as key community goals/concerns regarding freight:

- **Communication** – Communities are frequently called first when a problem occurs, are first-responders to emergencies, and deal with local neighborhoods when they try to build transportation projects.
- **Traffic flow and congestion** – Trucks must share road space with vehicles that behave very differently than they do and require different roadway geometry and infrastructure. Trains obstruct traffic when they occupy grade crossings. Air passenger flow consumes capacity from cargo.
- **Safety** – Major safety concerns arise at grade crossings, and also along rail and highway corridors.
- **Economic development** – This includes the desire to relocate freight facilities and operations to redevelop property for other uses.
- **Environmental and quality-of-life concerns** – This includes emissions, noise, and vibrations.

Pursuing this strategy may involve:

- *At the local level*, engaging with communities to collaboratively address loading and delivery needs in comprehensive plans, land use decisions, complete streets plans, parking studies, and zoning requirements. A fair amount of this task is research and education – familiarizing both State agencies and local governments about best practices for efficient roadways and properties.
- *At the regional level*, engaging with regional leaders and MPOs to identify the best sites for freight uses both on the periphery of urban centers and closer in, then developing region-level assessments of the feasibility of these sites and how their use for freight can be encouraged or assured.

Encourage private industry to adopt short-sea shipping

"Short sea shipping" is domestic marine freight movement from international gateway ports to regional and local ports along a coastline, lake, or river. While popular in Europe, the idea has never caught hold in the United States. Short sea shipping has the potential to alleviate congestion, reduce GHG emissions, and bring new business to regional ports such as New Bedford.

The US Maritime Administration's Maritime Highway Program (MARAD) has a vision of "full integration of reliable, regularly scheduled, competitive, and sustainable Marine Highway services into the surface transportation system that are a routine choice for shippers.

Pursuing this strategy may involve:

- Staying aware of the development of Marine Highways and being ready to respond to opportunities for Massachusetts shippers, consumers, and ports.

4.4 Deferred Strategies

Infrastructure Improvements

Build standardized small package drops

Amazon has already rolled out a standardized, centralized package drop facility: the Amazon Locker. Amazon Lockers are located in leased space at private businesses – schools, post offices, convenience stores, gas stations, etc. A customer can select a location for package delivery and is sent a code to open the locked, weatherproof box when their shipment arrives. As an additional service, Amazon Lockers can be used as drop-off locations for merchandise returns. DHL offers "Packstation" as a comparable service.

In urban and suburban environments, mailboxes represent a semi-standard drop-off point for envelopes. No equivalent exists for packages, however. In the age of e-commerce, the number of packages arriving at homes daily continues to increase.

Pursuing this strategy may involve:

- Building relationships among State and local officials and the business community to share information on trends in home delivery of small packages and the development of automated delivery methods.
- Watching the development of delivery vehicles and architectural trends to identify gathering trends.

5.0 Implementation

This freight plan is built around identifying strategies that work in the widest range of plausible futures. Chapter 4 discusses the content of each. The next step is turning the strategies into projects with locations, budgets, and schedules. This plan is not intended to perform this step – it is left to proponents and planners in future years.

Figure 5.1 (next page) illustrates MassDOT's project development process. This chapter seeks to answer four questions about these strategies:

- **Who** proposes individual projects?
- **Where** does funding come from?
- **How** is value to freight reflected in project scoring?
- **Who** manages projects and resulting assets?

Example projects are assessed in detail in Section 5.4. The remainder are addressed in Figure 5.3.

5.1 Who Proposes Projects?

Commonwealth of Massachusetts

MassDOT

MassDOT owns major roads in all regions of Massachusetts, including all Interstates and divided highways. It also take the lead in determining trucking restrictions on roads. Through its Rail and Transit Division, MassDOT owns many freight rail lines. Through the MBTA, MassDOT owns all major rail corridors in the immediate Boston Area.

MassDOT also serves as a conduit for Federal and State Aid funding. It receives and applies for Federal Aid for highways, railways, and airports that is passed on to municipalities and private owners.

MassDOT can influence the decisions of municipalities through guidance attached to municipal aid programs (such as the complete streets programs). Its regulatory and permitting functions allow it to influence industry.

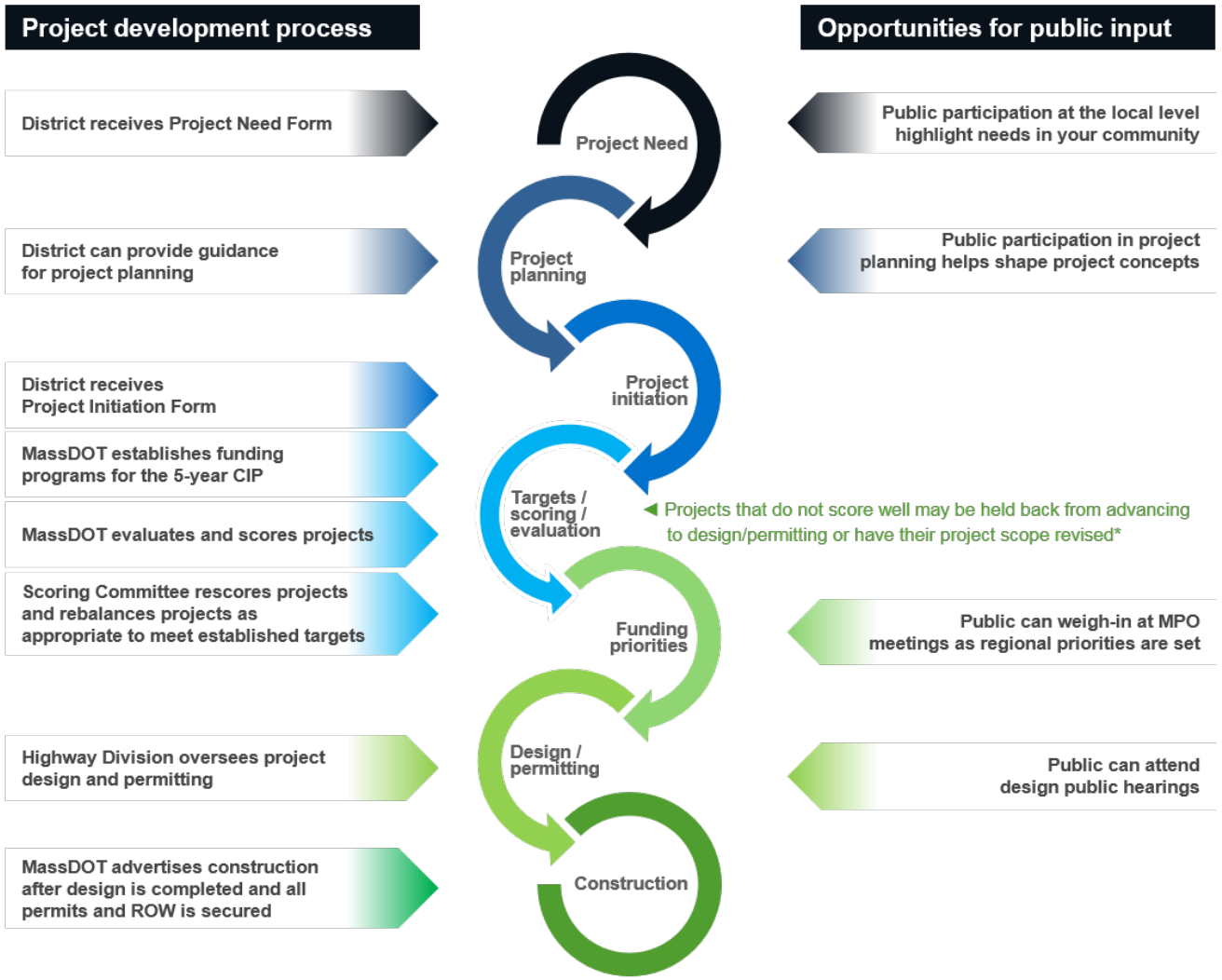
Massport

Massport owns the major air and sea ports in Massachusetts:

- Logan International Airport in Boston.
- Worcester Regional Airport.
- Hanscom Field in Bedford.
- Conley Terminal and Boston Autoport in Boston.

In addition, Massport is a significant landowner in the South Boston Waterfront neighborhood and is in the process of selling and leasing properties for dense mixed-use development.

Figure 5.1 MassDOT Project Development Process



** The targets/scoring/evaluation step was one of the recommendations of the Project Selection Advisory Council which was created by the General Court to assist MassDOT in creating uniform project selection criteria for transportation investments.*

Massport is a public authority, but not a Massachusetts government agency. It sustains itself from internal revenues, and does not use tax dollars. It is governed by a seven-member board that includes the Secretary of Transportation as an ex-officio member, but MassDOT does not have any other formal link to Massport.

Other State Agencies

State organizations with an interest in the health and impacts of the freight system include:

- **The Massachusetts Development Finance Agency (MassDevelopment)** is the Commonwealth's public lender and developer. It coordinates public support for and benefits from private development on the South Boston Waterfront and operates state piers in Gloucester, New Bedford, and Fall River (distinct entities from the port authorities in these locations).
- The **Executive Office of Energy and Environmental Affairs (EEA)**, which includes the Department of Environmental Protection (DEP). EEA is responsible for setting and meeting emissions reduction targets, regulating energy and utilities, and protecting environments that may be threatened by freight activity.
- **The Executive Office of Labor and Workforce Development (LWD)** collects workforce and employment data and provides career services support.
- **The Massachusetts General Court** membership is elected locally and therefore is a key conduit to bring the concerns of their constituents to agencies.
- **The Massachusetts Workforce Development Board** advises the Governor on building a strong workforce development system aligned with State education policies and economic development goals.

Federal Government

The Federal Government's role in the freight system includes both laws passed by Congress and rules and policies enacted by agencies in the Executive Branch. Some of these agencies are described below.

FHWA

The Federal Highway Administration (FHWA) funds and regulates State DOTs, municipalities, and private industry in the management and maintenance of roads. FHWA rules govern performance measurement and condition management for pavement, bridges, signage, and sign structures.

FHWA distributes funding under several programs, including Interstate Maintenance, the Highway Bridge Program, the National Highway Performance Program, and – beginning in FFY2016 – the National Highway Freight Program.

FMCSA

The Federal Motor Carrier Safety Administration (FMCSA) regulates the registration and licensure of trucking companies, drivers, and vehicles. Its official strategy includes:

- Developing and enforcing data driven regulations that balance safety with efficiency.
- Harnessing safety information systems to focus on higher-risk carriers in enforcing safety regulations.
- Targeting educational messages to carriers, commercial drivers, and the public.
- Partnering with stakeholders including Federal, State, and local enforcement agencies, the motor carrier industry, safety groups, and organized labor on efforts to reduce bus and truck-related crashes.

Important FMCSA rules include mandatory rest and licensure requirements for drivers, though the licensure process itself is facilitated by the states.

FRA

The Federal Railroad Administration (FRA) regulates private and public rail operations, including both passenger and freight. It oversees inspection of rail lines and writes and enforces safety regulations. It also provides Federal Aid grants to railroad owners through State DOTs.

MARAD

The Maritime Administration (MARAD) runs programs to promote use of waterborne transportation and to maintain the viability of the US merchant marine. It manages the Marine Highway Program and provides assistance to US-flag domestic shippers.

EPA

The Environmental Protection Agency (EPA) regulates emissions from freight industries and reviews potential infrastructure projects for environmental impacts. In addition, the EPA's regional office receives feedback from the public about emissions and noise from freight facilities.

Other Federal Agencies

Federal agencies with an interest in the health and impacts of the freight system include:

- **The Federal Aviation Administration (FAA)**, which provides grants for airport infrastructure through the Airport Improvement Program (AIP).
- The **Department of Homeland Security (DHS)** which includes the agencies that inspect and clear international freight at customs (TSA, CBP) as well as the US Coast Guard.
- The **US Department of Commerce**, which (with others) governs the US position on international trade and the **Economic Development Agency (EDA)**.

- The independent, Congressionally-mandated **Surface Transportation Board (STB)**, which regulates rail service and collects and disseminates data on rail traffic.
- The **Department of Labor**, which governs the relationship between workforce and management.

Municipalities

Massachusetts cities and towns own many key freight facilities, including:

- Roads and bridges, including some that are on the National Highway System (NHS) and the National Multimodal Freight Network (NMFN).
- All significant airports not owned by Massport.
- All major public seaport facilities not owned by Massport, including the Port of New Bedford and the Raymond L. Flynn Marine Park in Boston.

Cities also are key collaborators with MassDOT and Massport, as they are typically the first to hear feedback from the public, even concerning facilities they do not own.

Freight Industries

The freight system is inherently a public-private partnership. Private carriers and forwarders make use of infrastructure funded by the public sector through Federal and State Aid. In many cases, industry must partner with MassDOT, Massport, and others to apply for funding or to maintain infrastructure. In addition, industry owns and funds its own assets.

Motor Carriers

Motor carriers can be either for-hire ("trucking companies") or private corporations that operate their own fleets (retail chains or Amazon, for example). They handle the administrative side of the trucking industry, and as such are primarily concerned with conditions that impact the business environment, including health of infrastructure, permitting for OS/OW and hazmat, operations restrictions (time and weight), and licensure issues for their workforce. Motor carriers own a fleet of vehicles, and often own home facilities for maintenance.

The legislative interests of motor carriers in Massachusetts are represented by the Trucking Association of Massachusetts (TAM).

Rail Carriers

Three classes of railroad companies service the United States:

- **Class I** railroads are defined by the STB as "having annual carrier operating revenues of $250 million or more in 1991 dollars". Only one Class I railroad (CSX Transportation) serves or owns trackage in Massachusetts.
- **Class II** railroads haul regional freight. Class II railroads in Massachusetts include Pan Am (PAR and PAS) and Genesee and Wyoming (G&W), which owns the New

England Central (NECR) and Providence and Worcester (P&W) railroads.

- **Class III** railroads connect the Class I and Class II railroads to customers over short distances. This category also includes "short-line" railroads.

The primary function of rail carriers is to operate locomotives that pull trains made up of cars from multiple owners. Rail carriers also own most freight rail trackage in Massachusetts west of Worcester, although MassDOT and the MBTA have been steadily purchasing lines over time. The Boston Line west of Worcester, the P&W, the PAR, and the NECR remain in private hands.

Rail carriers conduct Federally-mandated inspections of any lines they own, and can receive Federal grants for improvements in partnership with MassDOT.

Sea Carriers

Sea carriers own, charter, and operate oceangoing ships (Massachusetts does not host any river shipping on inland waterways). No major container shipping companies are US-based, nor are their ships. Fuel companies use chartered barges and other vessels to deliver gasoline and fuel oil to private terminals in the Port of Boston (Chelsea Creek).

Air Carriers

Air carriers own, charter, and operate aircraft. They include integrated logistics carriers that operate air fleets (UPS, FedEx, DHL, and Amazon), cargo airlines, and passenger airlines that carry belly freight. While no air carrier directly owns a facility in Massachusetts, they are key stakeholders in any infrastructure improvement at Logan International Airport.

Freight Forwarders and the Shipping Community

Freight forwarders receive cargo from shippers (or pick it up), hold it at warehouses if needed, bring it to airports, seaports, or rail terminals, and do the same in reverse for incoming shipments. They use primarily public infrastructure at seaports and airports (loading doors and docks) and operate their own off-site facilities for processing and distribution. All of these stakeholders are key partners in any efficiency or operational improvements planned at the port facilities.

Distributors

Distributors receive shipments from producers and send them out to homes and retail outlets. Their primary function is regional storage in warehouses and distribution centers, but many of them also operate private truck fleets. They are often but not always sector-specific (milk and dairy, consumer goods).

Regional Bodies

Regional bodies include metropolitan planning organizations (MPOs), economic development councils (EDCs), and chambers of commerce.

MPOs develop transportation improvement plans (TIPs) and Regional Transportation Plans (RTPs) to identify targets for

Federal Aid investment in their regional transportation networks. MPOs also identify each region's section of the National Multimodal Freight Network. EDCs and chambers are often more aware than other public organizations of challenges facing local industry.

The Workforce

The freight workforce includes truck drivers, railroad drivers, logistics managers, dock workers, mechanics, seafood processors, and fishermen, among many others. In general, the workforce is unionized. Its primary concern is making a living and ensuring financial security for its members and their families.

On a daily basis, the workforce is affected by traffic congestion, deferred maintenance of infrastructure, efficient or inefficient administrative functions, regulations, fuel prices and availability, and many other performance indicators of the freight system.

The Business Community

The business community includes consumers, producers, buyers, and sellers of goods. Its legislative interests are represented by local and regional chambers of commerce and business coalitions.

The Public

The public has many, sometimes competing expectations for the freight system:

- Goods will arrive to nearby stores or to their homes quickly and reliably at all times and from all destinations.
- Trucks will operate safely and comfortably in mixed traffic and will not add noticeably to traffic congestion.
- Moving and idling trucks and trains will not produce noise or air pollution that impacts quality-of-life.
- Industrial uses and distribution will not be an aesthetic detriment in urban and waterfront neighborhoods.

The public expresses feedback through direct contact with government agencies, the freight industry, and retail businesses, as well as through State legislators.

The Commonwealth also seeks out public comment actively. Massachusetts law requires it for all major planning and infrastructure efforts, including this Freight Plan.

5.2 Where Does Funding Come From?

All of the strategies listed in Chapter 4 will require some degree of funding to be implemented. This section briefly describes the major funding sources available for use on the freight system and permissible applications for each. A diagram relating revenue sources to modes is provided in 5.2 (p.68).

Agency Revenue and Bonds

MassDOT and Massport both generate their own revenue and issue their own bonds for capital improvements. Municipalities

also collect tax and fee revenue that maintains roads and bridges, as well as revenue from seaports and airports that they own and operate.

MassDOT Bonds and Revenue

MassDOT programmed approximately $2.2 billion in FY16:

- **Bond Cap, Taxes and Fees** – MassDOT primarily funds its capital budget through General Obligation Debt (a.k.a. "GO Bonds" or "Bond Cap"). The Bond Cap can be used to fund projects on most MassDOT-owned elements of the freight system. The debt service is paid through revenue from gasoline and diesel excise tax ($0.24 per gallon), motor vehicle license, registration, and title fees, and the motor vehicle sales tax.
- **Tolls** – Toll revenue in Massachusetts is eligible for use only on the facilities where it is collected.

Massport Revenue

Massport generated approximately $700 million in FY16.

- Aviation – Aviation revenues include rentals (of gates and hangars), parking, landing fees, concessions (including rental car fees), and shuttle bus fares. Aviation accounted for 86% of Massport's total operating revenues in FY2016.
- Maritime – Maritime revenues include container loading and unloading fees, tariffs, facility rentals (including for seafood processors at Fish Pier), parking, and the Cruiseport. Maritime accounted for 11% of Massport's total operating revenues in FY2016.
- Real Estate – Real estate revenues include leases and rentals as well as fees. Real estate accounted for 3% of Massport's total operating revenues in FY2016.

As Massport is a self-sustaining authority, all Massport revenue must be used at Massport facilities.

Municipal Revenue

Municipalities apply several types of revenue to public works, including property taxes, fines and fees, and revenue from rental of municipal properties. The specific sources and amounts vary by municipality. While major air fright facilities are located at Massport-owned airports, municipally-owned facilities may serve niche demand. Municipalities that own ports and airports generate funding for use at those facilities.

Federal Aid

Federal Aid is allocated to MassDOT from several Federal agencies, each corresponding roughly to a MassDOT Division.

FHWA

The Highway Division receives reimbursement on freight system projects from FHWA through several programs, including:

- The **National Highway Freight Program (NHFP)** can be applied to infrastructure and operations enhancement

projects on the National Highway Freight Network (NHFN). Massachusetts's allotment from the NHFP is approximately $20M per year, on average.

- The **Railway-Highway Crossings Program (Section 130)** provides funds for the elimination of hazards at grade crossings.
- The **National Highway Performance Program (NHPP)** provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.
- The **Surface Transportation Block Grant Program (STBG)** provides flexible funding to best address State and local transportation needs. It can be applied on most highway and rail facilities.
- **Congestion Mitigation/Air Quality (CMAQ)** is applicable on projects that will help Massachusetts meet the requirements of the Clean Air Act.
- **Off-System Bridge** funding is used for bridges that see less traffic, in order to expand high-quality system access.
- The **Highway Safety Improvement Program (HSIP)** is eligible for use on safety improvements.

FAA

The FAA provides funds to airport sponsors (cities, towns, counties, port authorities, states, etc.) through its **Airport Improvement Program (AIP)**. In Massachusetts, Massport uses very little AIP funding due to its independent revenue streams, so AIP funds are typically applied to infrastructure projects at municipal airports. MassDOT must provide matching funds for between 5% and 25% of project costs, depending on the size of the airport.

State Aid to Municipalities

Chapter 90

MassDOT provides municipal aid for roadway projects through the Chapter 90 Program. Chapter 90 projects are 100% reimbursable, meaning that municipalities are not required to contribute to them, though municipalities may contribute significantly to the general upkeep of their roadway network. Permissible uses include resurfacing and related work, bridges, right-of-way acquisition, shoulders, side road approaches, landscaping, drainage, sidewalk, traffic control and service facilities, and lighting.

Municipalities are allocated $200 million of annual Chapter 90 funds based a composite of three factors:

- Road miles – 58.33%;
- Population – 20.83%; and
- Employment – 20.83%.

After the total apportionment for a city or town is calculated, municipalities apply for reimbursements on a project-by-project basis.

Municipal Bridge Program

MassDOT manages and funds rehabilitation and replacement of municipally-owned bridges, and as of 2016 has allocated $50 million in general obligation bonds for municipal structures over the next five years.

Complete Streets Program

MassDOT provides funding to cities and towns for the completion of "Complete Streets" plans, which could include provisions for freight loading areas in business districts.

Public-Private Partnerships

Public-private partnerships (PPPs) are common in many areas of the freight system, as key assets (rail lines and port facilities, for example) are owned privately. These owners can apply on their own for MassDOT grants through sources such as the Industrial Rail Access Program (IRAP) that is used for new industrial sidings and opening or reopening branch lines. Railroads can also lobby MassDOT for project specific funding (for 286K upgrading, for example).

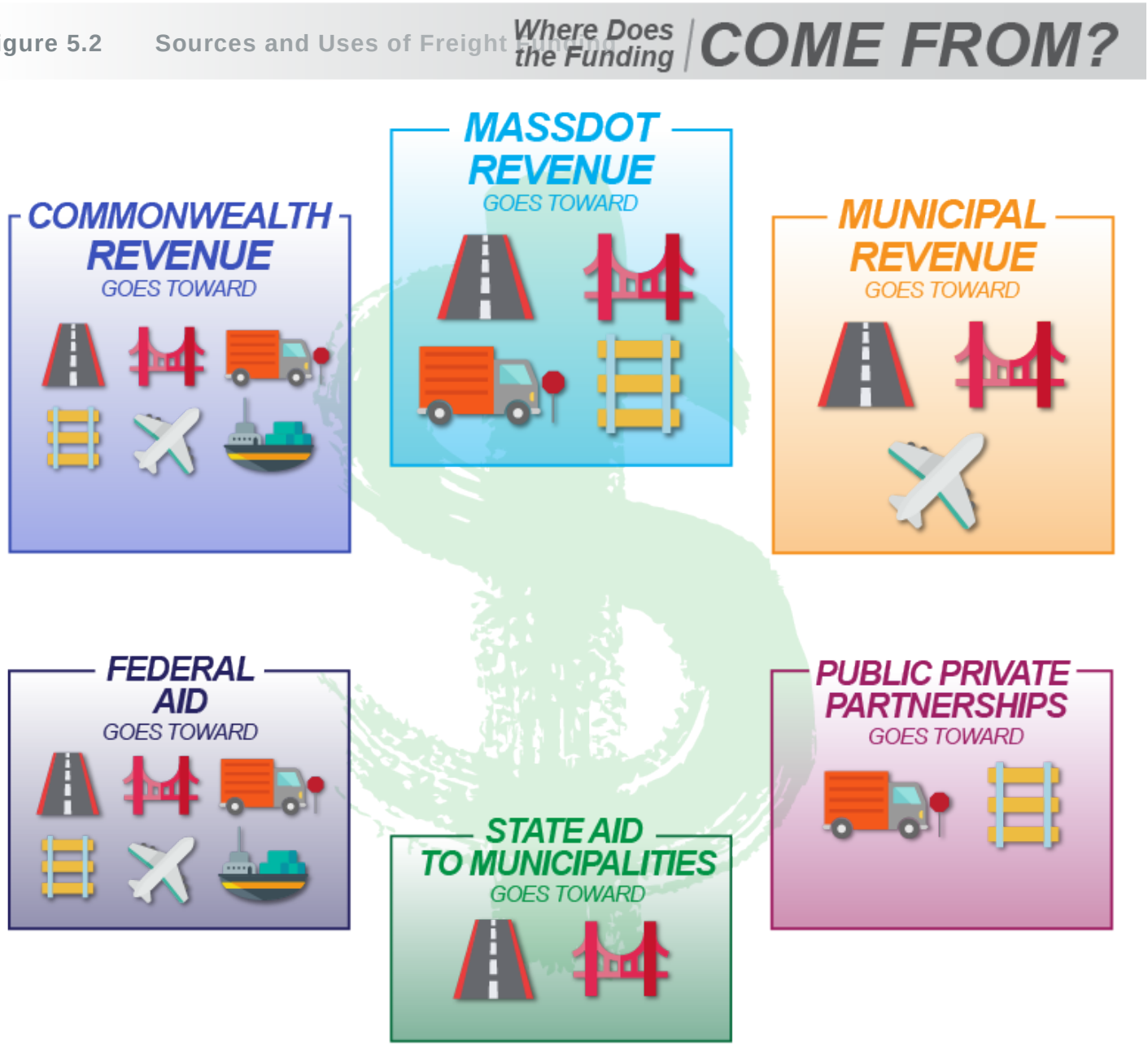
Many additional PPP opportunities exist. The second part of the Truck Parking Case Study (see p.77) addresses one particular opportunity for mutually-beneficial collaboration between motor carriers, truck stop owners, and MassDOT.

Other Sources

A significant additional source of funding for the freight system is the mitigation paid by Volkswagen AG in a settlement with the EPA in 2016. $2.7 billion in mitigation funds will be distributed to 50 states, Puerto Rico, the District of Columbia, and native tribes, and can be used for any projects intended to reduce emission of NO_x from heavy duty diesel sources near population centers. **Eligible actions include Truck Stop and Rail Yard Electrification and support for replacing old, inefficient diesel trucks and switching locomotives.** Massachusetts has been allocated $69 million in mitigation funds, and the Department of Environmental Protection (DEP) is currently soliciting public comment on how best to spend the Commonwealth's share, estimated to be over $75 million.

Figure 5.2 (next page) summarizes the sources and uses of freight funding.

Figure 5.2 Sources and Uses of Freight Funding



5.3 How Do We Ensure and Measure Results?

In order to make targeted investments in the freight system, MassDOT must track performance measures for freight and incorporate benefits for freight into its capital planning process. This section describes how that might be done.

Freight Performance Measures

The final rules established performance measures to support MAP-21 and the FAST Act for the freight system in the categories of safety, infrastructure, and system performance. MassDOT is working to calculate the measures and meet the Federal deadlines for reporting. In the future, it will work to revise performance-based planning and programming processes to explicitly include freight measures.

Performance measures that relate to freight include:

- **Safety**
  - Number and rate of fatalities on all public roads.
  - Number and rate of serious injuries on all public roads.
  - Number of non-motorized fatalities and serious injuries on all public roads.
- **Infrastructure**
  - % of Interstate pavements in good/poor (g/p) condition.
  - % of non-Interstate NHS pavements in g/p condition.
  - % of NHS bridge deck area in g/p condition.
- **System performance**
  - Truck Travel Time Reliability (TTTR) index: This measure is calculated by dividing the 95th percentile truck travel time on a road segment by the 50th percentile travel time.

MassDOT currently tracks all of the safety and infrastructure performance metrics listed above and publishes them in its annual Tracker. MassDOT has received an FHWA Second Strategic Highway Research Program (SHRP2) grant to process and visualize highway reliability metrics including TTTR, and this work is ongoing.

MassDOT considers truck loading in its pavement designs to ensure adequate service life of the pavement. MassDOT utilizes data from permanent Weigh-In-Motion (WIM) stations to monitor the truck percentages, lane distribution and loading on major highways. Annual variations in truck loading can be identified when analyzing this WIM data. This data is used when planning future projects and assists in the design of roadway pavement projects.

Capital Prioritization of Freight Projects

MassDOT assigns programs to one of three capital priorities: reliability, modernization, and expansion. Reliability receives the majority of capital funding. Reliability projects are selected using asset management systems associated with each program.

Projects proposed for the modernization and expansion priorities are evaluated by the Divisions using the criteria below. Freight needs may be prioritized by creating a new criterion or by incorporating the benefits to freight into existing criteria. In the latter case, all of the criteria may be applicable to freight projects:

- **System Preservation** – Projects that improve the condition of freight infrastructure might be scored higher under this criterion. MassDOT already takes preventative measures to preserve roadways subject to heavy vehicle usage.
- **Mobility** – Projects that reduce congestion for system users or enable increased/improved movement of people and goods might be scored higher under this criterion.
- **Cost Effectiveness** – Projects that promote preventive maintenance and other strategies to reduce the life-cycle cost of freight system assets might be scored higher under this criterion.
- **Economic Impact** – Projects that support the freight workforce or improve the supply chain provide significant economic development benefits to the Commonwealth and might be scored higher under this criterion. MassDOT currently is studying ways to better incorporate freight into the economic impact criteria.
- **Safety** – Projects that make infrastructure safer to use or that reduce collisions between freight vehicles and other system users might be scored higher under this criterion.
- **Social Equity and Fairness** – Projects that support the freight workforce or promote investment in rural areas, gateway cities, and low-income urban neighborhoods might be scored higher under this criterion.
- **Environmental and Health Effects** – Projects that reduce greenhouse gas and other pollutant emissions might be scored higher under this criterion.
- **Policy Support** – All projects that advance the strategies in this plan support MassDOT policy and might be scored higher under this criterion.

In addition to these criteria, the existence of a dedicated Federal funding stream (or other established funding source) increases the priority of projects in the PSAC process.

5.4 Putting it All Together

This section details the proponents, funding, prioritization criteria, and management strategies that can be used to implement five selected strategies. The five selected strategies were important to the Freight Advisory Committee and MassDOT. They also serve as illustrative examples of the considerations and steps involved in pursuing any strategy.

- **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, seaports, and rail terminals in mixed-use urban settings**.
- **Develop Intelligent Transportation Systems and Active Transportation Demand Management**.

Brief summaries of the implementation for all of the strategies in the Freight Plan are provided in Figure 5.3.

Implementing an Immediate Strategy

BUILD TRUCK STOPS AND PARKING

The problem of insufficient truck parking is not limited to Massachusetts. Many if not all states face it. Nonetheless, ***it is a critical immediate priority that new truck stops and parking areas be constructed, in particular along the northern arc of I-495.***

In addition to increasing parking capacity, there are other measures that states can take to improve the efficiency of their existing parking stock:

- Electrify truck parking areas so that vehicles need not idle. This will reduce emissions and noise pollution.
- Improve driver information systems, providing parking availability in advance and allowing for reservations.

Image Credit: Boston Region MPO.

ACTIONS

Collaborate among State, local, regional, and multi-state authorities to locate appropriate properties on primary truck routes.

Form public-private partnerships between State and local authorities and private truck stop operators to defray the risk of opening facilities.

Develop smartphone apps and variable message signboards to allow drivers to view available spaces, reserve spaces, and receive directions.

WHO PROPOSES?

MassDOT.

WHO PAYS?

Public Private Partnership between operator and MassDOT, with MA funds from NHFP and other sources for truck stop electrification (TSE).

WHAT BENEFIT?

Cost-effectiveness (PPP), Economic Impact, Safety, Environmental and Health (TSE), Policy Support (in the Freight Plan).

WHO MANAGES?

Private operator and municipality.

Implementing an Immediate Strategy

UPGRADE TO 286K STANDARD RAIL

Freight railroads provide a cost effective, safe, and energy efficient option for Massachusetts's shippers and receivers. Massachusetts's freight railroads are an important link to the national freight rail network. But there are many rail lines in Massachusetts that can only carry cars loaded with 263,000 lbs. – even though the national norm is now 286,000 lbs. That means that many rail cars destined for Massachusetts receivers or coming from Massachusetts shippers cannot be fully loaded. Even rail cars just travelling through Massachusetts on lines that are only rated for 263,000 lbs. will be hampered. This weight restriction adds an element of inefficiency to every freight rail shipment that must use Massachusetts's 263,000 lb. lines and puts Massachusetts's companies at a competitive disadvantage.

ACTIONS

Identify areas with rail service and clusters of shippers/receivers who could benefit from increased weight limits.

Work with private railroads to secure federal funding to increase weight limits on lines that are likely to provide significant benefits to shippers and receivers.

WHO PROPOSES?

Private railroads supported by MassDOT.

WHO PAYS?

Federal aid, private railroads, and MassDOT.

WHAT BENEFIT?

Economic Impact (job creation, productivity gains, and reduced operating costs), Mobility (reduced congestion), Safety, Environmental and Health Effects, and Policy Support.

WHO MANAGES?

Railroad owners and operators.

Implementing an Immediate Strategy

RESOLVE KEY BOTTLENECKS ON HIGHWAYS

Freight mobility within the 495 MetroWest region has historically been plagued by bottlenecks at the interchanges with I-90 and Route 9, located less than a mile and a half apart.These bottlenecks happen as they intersect the freight spine flowing from Conley Terminal to Worcester and points west.

Traffic congestion at each of these interchanges regularly occurs during peak commute times and non-peak commute times. In fact, it is more likely that during the off-peak hours when interstate trucking volumes are generally higher that backups at the on and off-ramps to I-495 occur.

The corridor also presents challenges to the trucking industry due to the grades along the approaches to the ramp junctions. Steep inclines are difficult for heavy commercial vehicles to negotiate in slow or stop and go traffic, further adding to the vehicular delays and congestion observed. Conversely, sharp downgrades require the heavy trucks to begin to decelerate well in advance of a ramp junction thereby creating a safety concern with traffic changing lanes to bypass the slower moving truck.

Improvements to the I-495 at I-90 and Route 9 Interchanges are essential for the quality of life, safety, and continued economic growth in MetroWest, and serving to maintain Massachusetts viability in the national freight network.

ACTIONS

Engage the trucking industry and general public to document the magnitude of the bottleneck congestion directly related to freight mobility between the adjacent I-495 and I-90 and I-495 at Route 9 interchanges.

Conduct an analysis to determine the economic impacts of reducing delay and lost productivity due to existing congestion at the junctions of I-495 at I-90 and Route 9.

Identify infrastructure improvements needed to improve safety and mobility at the I-495 freight bottlenecks, including the potential for truck climbing or auxiliary lanes to mitigate the closely spaced interchanges.

WHO PROPOSES?

Industry, the workforce, the business community and MassDOT.

WHO PAYS?

MassDOT, with funds from INFRA Grant.

WHAT BENEFIT?

Mobility, safety, economic impact, environmental and health effects (Air Quality) and policy support.

WHO MANAGES?

MassDOT.

Implementing an Immediate Strategy

MAINTAIN FREIGHT ACCESS

In order to sustain the 7,000 direct jobs and $4.6 billion of annual economic impact, it is critical to upgrade Conley Terminal and ensure efficient interstate highway access and last mile connections. Conley Terminal is at the beginning of the freight spine that connects to Worcester/CSX via I-90 and continues to points west via rail and roadway. It also is connected to the new Thomas J. Butler Haul Road, a dedicated first/last mile freight facility. Recent investments to make the Port of Boston more competitive have resulted in all major global ocean carriers calling on Conley Terminal and record breaking container volume. However, the shipping industry is moving to larger container vessels to achieve economies of scale. As a result, ports along the East Coast are investing in harbor deepening and landside infrastructure to serve these larger vessels. With the expansion of the Panama Canal, 8,500-9,000 TEU ships began calling the Port of Boston, a 40-60% increase in ship size. But Conley's current infrastructure cannot efficiently serve these larger vessels and volume growth without additional investment.

ACTIONS

Design and build new deep-water berth and wharf and procure larger ship-to-shore cranes to serve neo-panamax container ships.

Collaborate with MassDOT, City of Boston and MCCA to improve connection to the interstate highway system by building the Cypher-E Freight Corridor to serve Conley Terminal and other maritime and industrial businesses in the Port of Boston.

Implement new Intelligent Transportation System at Conley Terminal to accelerate gate activity, minimize truck processing time and maximize productivity.

WHO PROPOSES?

Massport.

WHO PAYS?

Massport, Commonwealth, MassDOT; also seeking federal grant funding and potential private investment.

WHAT BENEFIT?

Economic Impact (job creation, productivity gains, and reduced operating costs), Mobility (reduced congestion), Safety, Environmental and Health Effects, and Policy Support.

WHO MANAGES?

Massport.

Implementing a Robust Strategy | LEVERAGE CONNECTED VEHICLE TECH

Connected vehicle technology can be applied in multiple ways to improve en-route efficiency of freight vehicles. Among them:

- Trucks can communicate with each other and about their location and intentions.
- Trucks can be grouped into "convoys", with automated vehicles following a human-controlled lead vehicle.
- Trucks can share information as truckers already do concerning traffic congestion, crashes or other incidents, weather, etc.
- Trucks can report travel times along certain routes, creating the opportunity for truck-specific routing programs that account for roadway-geometry and the location of loading and delivery points.

ACTIONS

Engage the trucking industry, the business community, officials, and the public to develop a list of potential implementations of connected vehicle technology.

Keep tabs on developments and research in the private sector and in academia and ensuring that information on potential technologies is shared between the Commonwealth and its industries.

Explore ways in which action at the State level can facilitate or encourage connected-vehicle technologies in freight, including the Automated Vehicles Working Group.

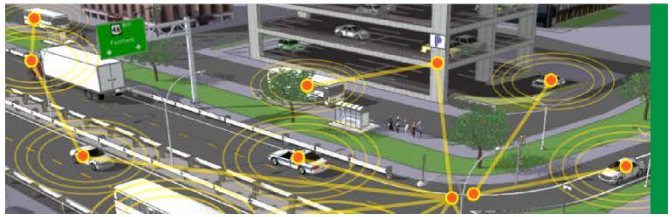


Image Credit: VOLPE Center.

WHO PROPOSES?

Industry, The Workforce, and MassDOT.

WHO PAYS?

Generally Industry, though other vehicle fleet owners (like MassDOT) might participate.

WHAT BENEFIT?

Mobility, Safety, and Policy Support.

WHO MANAGES?

Industry, The Workforce, and MassDOT.

Figure 5.3 Implementation of Strategies

Strategy	Proponent	Funding	PSAC Criteria	Management
Immediate Strategies				
Improve the condition of freight network assets	• MassDOT • Massport • MPOs • Municipalities • The Public	• Federal Aid • MassDOT • Massport	• System Preservation • Mobility • Cost Effectiveness • Safety • Policy Support	• MassDOT • Massport • Asset owners
Build or expand on truck stops on primary truck routes	• MassDOT	• MassDOT • Truck Stop Operator	• Cost Effectiveness • Economic Impact • Safety • Policy Support	• Truck Stop Operator • Municipalities
Upgrade rail lines to the 286K standard	• MassDOT • Railroads	• Federal Aid • MassDOT • Railroads	• Economic Impact • Safety • Mobility • Environment and Health • Policy Support	• Railroad owners and operators
Resolve key bottlenecks on highways	• MassDOT • Industry • Labor • Business Community	• Federal Aid (INFRA) • MassDOT	• Mobility • Economic Impact • Safety • Environment and Health • Policy Support	• MassDOT
Maintain uncongested freight access to airports, seaports, and rail terminals in mixed-use urban settings	• Massport	• Federal Aid • MassDOT • Massport • Commonwealth • Private investment	• Mobility • Economic Impact • Safety • Environment and Health • Policy Support	• Massport

Strategy	Proponent	Funding	PSAC Criteria	Management
Develop a workforce strategy for freight professions	• Vocational Schools • Labor • Industry	• MassDOT • Massport • Vocational Schools • Labor • Industry	• Economic Impact • Social Equity • Policy Support	• MassDOT • Vocational Schools • Labor • Industry
Support policies to reduce CO_2 emissions from all freight vehicles	• MassDOT • Commonwealth (DEP)	• Federal Aid • Vehicle Owners (MassDOT, Municipalities, Industry)	• Environment and Health • Policy Support	• Vehicle Owners
Harmonize oversize/overweight permitting across New England	• MassDOT	• Federal Aid • MassDOT	• Economic Impact • Policy Support	• MassDOT
Coordinate with freight planning in neighboring states	• MassDOT	• Federal Aid • MassDOT	• Economic Impact • Policy Support	• MassDOT
Robust Strategies				
Protect freight facilities from climate change impacts	• MassDOT • Massport • Commonwealth • MPOs • Municipalities • The Public	• Federal Aid • MassDOT • Massport	• Safety • Policy Support	• MassDOT • Massport • Municipalities
Develop Intelligent Transportation Systems and Active Demand Management	• MassDOT	• Federal Aid • MassDOT • Industry	• Cost Effectiveness • Economic Impact • Safety • Policy Support	• MassDOT • Industry

Strategy	Proponent	Funding	PSAC Criteria	Management
Hedging and Shaping Strategies				
Build right-sized distribution centers inside of Route 128	• EDCs • Industry	• MassDOT • Municipalities • Industry	• Economic Impact • Policy Support	• Municipalities • Industry
Electrify truck stops	• MassDOT	• MassDOT • Truck Stop Operator	• Cost Effectiveness • Environment and Health • Policy Support	• MassDOT • Truck Stop Operator
Explore the electrification of railyards	• Federal Government • MassDOT • Railroads	• Federal Aid • MassDOT • Railroads	• Environment and Health	• Railroad owners and operators
Identify and preserve existing rural and industrial sites for warehousing and distribution development	• MassDOT • EDCs • Municipalities • MPOs • Industry	• MassDOT (staff time) • Municipalities (staff time) • EDCs (staff time)	• Economic Impact • Social Equity • Policy Support	• EDCs • Municipalities
Develop delivery areas in urban districts and town centers	• MPOs • EDCs • Municipalities	• MassDOT • Municipalities	• Economic Impact • Safety • Policy Support	• Municipalities
Encourage increased use of underutilized gateway infrastructure (ports and airports)	• Federal Government • MassDOT • Massport • Municipalities • EDCs	• Federal Aid • Municipalities	• Mobility • Economic Impact • Policy Support	• Massport • Municipalities
Improve the efficiency of air cargo processing at Logan Airport and in the surrounding area	• Massport • Industry	• MassDOT • Massport • Industry	• Economic Impact • Policy Support	• Massport • Industry

Strategy	Proponent	Funding	PSAC Criteria	Management
Better integrate supply chain information to reduce administrative and regulatory delays	• MassDOT	• Federal Aid • MassDOT • Massport	• Economic Impact • Safety • Policy Support	• Federal Government • MassDOT • Massport • Municipalities
Review State regulations and practices that impact security clearance and chain-of-custody for imports and exports	• MassDOT	• MassDOT	• Economic Impact • Policy Support	• MassDOT
Leverage connected vehicle technology to maximize en-route efficiency	• MassDOT • Industry • Labor	• MassDOT • Industry	• Mobility • Safety • Policy Support	• MassDOT • Industry • Labor
Encourage side guards on trucks to protect cyclists	• MassDOT	• Federal Aid • Vehicle Owners (MassDOT, Municipalities, Industry)	• Economic Impact • Safety • Policy Support	• MassDOT (regulation) • Industry (maintenance)
Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution, and loading into their planning, zoning, and land use decision-making and polices	• EDCs • Municipalities • Industry	• MassDOT (staff time) • Municipalities (staff time) • EDCs (staff time)	• Economic Impact • Social Equity • Policy Support	• MassDOT (staff time) • Municipalities (staff time) • EDCs (staff time)
Encourage private industry to adopt short-sea shipping	• Industry	• Federal Aid	• Mobility • Economic Impact • Policy Support	• Industry

Strategy	Proponent	Funding	PSAC Criteria	Management
Deferred Strategies				
Build standardized small package drops	• Municipalities	• Municipalities (staff time) • Industry (developers)	• Economic Impact • Policy Support	• Municipalities • Industry • The Public

6.0 The Road Ahead

This Freight Plan identifies the strengths of the Massachusetts freight system as well as the challenges facing it. It proposes strategies for addressing these challenges that include maintaining the current system in a state-of-good-repair, building a sustainable and resilient system in the face of climate change, and embracing Intelligent Transportation Systems and new technologies.

These strategies will be pursued according to the vision and guiding principles stated in this plan:

The Massachusetts Freight System will:

- Be safe, secure, and resilient;
- Maintain a state-of-good-repair for key freight assets;
- Contribute to the economic competitiveness of Massachusetts;
- Provide efficient and reliable mobility within Massachusetts and to/from neighboring states and nations; and
- Support healthy and sustainable communities.

Our guiding principles in implementing this vision are:

- Consider the experience of *all* customers, including shippers, carriers, customers, workers, and neighbors;
- Provide reliable, efficient service within budget constraints;
- Take advantage of innovations and technology; and
- Support a well-trained workforce with good-paying jobs.

A key element to realizing this vision is collaboration and communication between public and private stakeholders. **Every person in Massachusetts is a freight system customer to a substantial degree. For this reason, all of their feedback is valuable.** The system should function for the benefit of shippers, carriers, customers, the workforce, and the public, while doing as little detriment to them as is possible.

In order to facilitate one element of this collaboration, **MassDOT will seek to maintain its relationships with the members of the Freight Advisory Committee**, including Massport, industry, municipalities, and Federal agencies. In the coming months of 2017, MassDOT will consider the proper format for the FAC's continued operation, but its contributions to this Freight Plan have been significant and critical.

MassDOT welcomes public participation in envisioning a vibrant future for the Massachusetts freight system as a contributor to a thriving economy. This plan is only a first step. Together, the people, industries, and agencies of the Commonwealth of Massachusetts can maintain and build an innovative freight system.

Appendix A. Proposed Projects Using NHFP Funds

The Capital Investment Plan (CIP) serves as the definitive capital planning document for MassDOT. The CIP is the annual prioritized list of all projects using all sources of available funding and should not be superseded by mode (or sector)-specific planning documents that are developed on a five-year cycle.

Projects can take several years from conception to programming and advertising. Once the Freight Plan is approved by FHWA, it is expected that project engineers and proponents will begin to design projects that explicitly fulfill the strategies outlined in the Freight Plan.

In the meantime, those projects currently programmed in the CIP that best meet the goals of the draft Freight Plan were selected to use National Highway Freight Program NHFP funding, based on their location on roadway segments designated as Critical Urban Freight Corridors or Critical Rural Freight Corridors by the MPOs, with concurrence from MassDOT.

Each MPO used its own analysis and discretion to designate their limited mileage allotments in an effort to address their greatest regional freight needs. By programming these projects using a mix of NHFP and other funds, MassDOT will be advancing projects on the roadway segments deemed most critical to freight needs by the MPOs. Each project was additionally screened to make sure it met at least one statutory requirement for use of NHFP funds. The project list will be updated annually following the development of the STIP and CIP.

The CIP can be found at: https://goo.gl/297U6N

The STIP can be found at: https://goo.gl/EqFSsN

Table 6.1 Projects Proposed to Use National Highway Freight Program Funds, 2019-2023

CIP/STIP program	Project description	Total federal participating project cost	Funding source	2018	2019	2020	2021	2022
Federal NHFP Funds Programmed				$7,747,490	$11,951,976	$14,635,658	$32,245,872	$22,458,721
Federal NHFP Funds Allocated				$17,880,858	$20,212,849	$22,458,721	$22,458,721	$22,458,721

CIP/STIP program	Project description	Total federal participating project cost	Funding source	2018	2019	2020	2021	2022
Roadway Reconstruction	NORTHAMPTON- IMPROVEMENTS ON I-91 INTERCHANGE 19 AT ROUTE 9 AND DAMON ROAD	$7,438,489	Freight funding	$5,950,791				
			Other federal funding	$0				
			Non-federal match	$1,487,698				
Roadway Reconstruction	PALMER- RECONSTRUCTION OF ROUTE 32, FROM 765 FT. SOUTH OF STIMSON STREET TO 1/2 MILES SOUTH OF RIVER STREET (PHASE I) (1.63 MILES)	$6,134,080	Freight funding		$2,856,243			
			Other federal funding		$2,563,776			
			Non-federal match		$714,061			
Roadway Reconstruction	WORCESTER- SIGNAL & INTERSECTION IMPROVEMENTS ON ROUTE SR 122A (PROVIDENCE STREET) AT MILLBURY STREET & MCKEON ROAD	$594,000	Freight funding		$475,200			
			Other federal funding		$0			
			Non-federal match		$118,800			
Roadway Reconstruction	MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUNCEY STREET)	$594,000	Freight funding		$475,200			
			Other federal funding		$0			
			Non-federal match		$118,800			
Roadway Reconstruction	BARNSTABLE- INTERSECTION IMPROVEMENTS AT IYANOUGH ROAD (ROUTE 28) AND YARMOUTH ROAD	$9,573,048	Freight funding		$7,658,438			
			Other federal funding		$0			
			Non-federal match		$1,914,610			

CIP/STIP program	Project description	Total federal participating project cost	Funding source	2018	2019	2020	2021	2022
Intelligent Transportation Systems	STATEWIDE- EXPANSION OF HIGHWAY OPERATIONS CENTER INCIDENT DETECTION SYSTEMS	$1,442,307	Freight funding		$1,153,846			
			Other federal funding		$0			
			Non-federal match		$288,461			
Intersection Improvements	WELLFLEET- INTERSECTION IMPROVEMENTS & RELATED WORK AT ROUTE 6 & MAIN STREET	$2,000,400	Freight funding			$1,600,320		
			Other federal funding			$0		
			Non-federal match			$400,080		
Roadway Reconstruction	HOPKINTON- WESTBOROUGH- RECONSTRUCTION OF I-90/I-495 INTERCHANGE	$144,000,000	Freight funding			$800,000	$20,212,849	$20,212,849
			Other federal funding			$0	$9,787,151	$9,787,151
			Non-federal match			$200,000	$25,612,483	$25,612,483
Track and ROW Reliability	MIDDLEBORO SUBDIVISION BRIDGE MP 6.84 ABUTMENT REPAIRS		Freight funding		$2,021,285			
			Other federal funding		$0			
			Non-federal match		$505,321			
Track and ROW Modernization	UPGRADES TO 286K ON SOUTHEASTERN MASSACHUSETTS RAIL LINES		Freight funding			$2,245,872	$2,245,872	$2,245,872
			Other federal funding			$0	$0	$0
			Non-federal match			$561,468	$561,468	$561,468

Appendix B. Public Comment and Responses

B.1 John Beling, Massachusetts Department of Environmental Protection

The Massachusetts Department of Environmental Protection ("MassDEP") submits these comments on the Draft Massachusetts Freight Plan ("Freight Plan").

One of the performance goals of the Freight Plan is: 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 of a 25% statewide reduction in GHG [greenhouse gas] emissions from utilities, industry, transportation, and other sources by 2020 (Global Warming Solutions Act of 2008). One aspect of the freight industry that impacts the health and livability of the communities is locomotive idling. MassDEP frequently responds to complaints of noise and emissions caused by locomotive idling in areas where people live and work. Within the last 5 years, residents and local officials in 40 Massachusetts communities have complained to MassDEP and EPA Region 1 about long-duration locomotive idling. Idling locomotives are a source of criteria and toxic air pollutants, as well as GHG emissions. MassDEP offers some ways in which the industry could improve its practices so as to mitigate these impacts.

Keep Idling Trains Away from Sensitive Receptors. One strategy has been to keep idling locomotives away from sensitive receptors such as residences, schools, health care facilities. In one town, officials allowed railroad employees to park locomotives at their old, remote "snow dump" during needed breaks. While the locomotive is still idling, the air emissions impacts on sensitive receptors are reduced compared to the alternative parking location.

Adopt Technologies to Control Locomotive Idling. Some locomotives are equipped with anti-idling technology such as Automatic Engine Start Stop (AESS) systems. These shut the engines down after they have been at idle for 20 to 30 minutes but will restart the engine if the brake system pressure starts to fall too low. Auxiliary Power Units (APUs) installed in locomotives typically burn one gallon per hour of diesel fuel versus five gallons per hour by an idling locomotive engine. APUs are designed to keep oil and water warm while the main engine is shut down. These technologies reduce air emissions and conserve fuel.

Improve Infrastructure at Rail Terminals and Yards. Some rail terminals and yards are equipped with infrastructure such as ground air and shore power. The use of ground air to maintain brake pressure permits the operator to turn the train engine off unless it is below 40 degrees Fahrenheit (or colder, if the train is equipped with an APU). Shore power can be used for certain types of APUs such as HOTSTART layover heaters in below 40 degrees Fahrenheit weather and saves consumption of fuel. Additional ground air and shore power installation will further reduce emissions.

MassDOT could use existing programs and resources such as Industrial Rail Access Program and Congestion Mitigation & Air Quality grants to support installation of new infrastructure, and railroads' adoption of onboard technology for switcher and line-haul locomotives. Also, locomotive idle reduction technology verified by EPA's SmartWay program is eligible for state Diesel Emission Reduction Act funding. Use of these practices and these technologies will lead to a reduced impact on the health and livability of the communities where trains idle, and will serve to reduce GHG emissions caused by train idling.

MassDOT Response

Thank you for the comments. We will explore a dialogue with the relevant railroads about the electrification of railyards, which will be reflected in the addition of a hedging strategy to that effect. Additionally, we are happy to work with MassDEP on the issue.

B.2 Berkshire Regional Planning Commission

The Berkshire Regional Planning Commission (BRPC) appreciates the opportunity to share comments on the Draft Massachusetts Freight Plan. Based on our review, this document appears to meet federal mandates which require a comprehensive, immediate-to-long term plan for the Commonwealth along with identifying planning activities and investment strategies. The draft Freight Plan also includes numerous policies and performance goals which will provide great opportunities and benefits for both residents and the economy. The document utilizes a typical planning document outline with the majority of the focus occurring on recommended strategies and implementation. In general, the document accomplishes its intended objectives and will serve to improve the freight network while the State's economy continues to grow. BRPC offers the following suggestions and comments to further strengthen this important plan.

The section addressing the Massachusetts freight network only makes a brief mention of Critical Rural Freight Corridors and provides a reference map. The plan should include more discussion on the importance of rural freight corridors as the plan itself makes mention to the fact that manufacturing, distribution and warehousing land uses are being displaced from growing urban areas. As this trend continues, rural corridors will become more vital. Existing corridors are also important for freight and goods movement in rural areas that struggle to retain manufacturing and commercial businesses.

The Rail Lines section address the multitude of rail lines throughout the Commonwealth. The plan would benefit from having a graphic which clearly depicts each individual line. The addition of information on the speed of each rail segment would be useful. Information on track weight limits in Figure 2.7 would be easier to understand if colors were used instead of varying line weights.

Table 2.1 is included for the purposes of identifying proposed projects which will use National Highway Freight Program Funds. Two larger funding sources at MassDOT have yet to identify highway and rail projects. It is imperative that MassDOT's

Highway Division and Rail/Transit Division work with MPOs to identify viable freight projects to program this funding.

Section 4 focuses on recommended strategies whereby strategies are grouped into one of five categories for each plausible future to accommodate a scenario based planning approach. This prioritization approach is certainly appropriate for this type of planning document. BRPC's comments related to the recommended strategies follow.

Improving the condition of freight network Assets (Infrastructure Improvements) includes the creation of a feedback mechanism for industry to report infrastructure issues that significantly impact their business and contains an example of bridge weight limits. BRPC strongly supports this recommended strategy as it promotes accountability. We recommend that this strategy, as well as others, name/designate a specific state department or agency with the responsibility for implementing the respective strategy.

Directly related to the example above, weight restrictions/limits on bridges are a major issue and create another impediment to our struggling manufacturers. Additional funding should also be identified as an immediate strategy to improve infrastructure and bring roads and bridges up to a good state of repair.

The strategy recommendation that locally owned assets located on the National Multimodal Freight Network receive a priority boost is welcomed. However, it does not appear that there would be many transportation assets which would qualify. Consideration should be given to modifying this strategy to make priority funding available for local projects that would provide a benefit to the national freight network including projects which would improve the state of good repair of facilities.

Upgrading rail lines to 286K standard rail is another recommendation supported by BRPC. Although the example ten-year, medium term plan to complete the work appears reasonable, the Rail and Transit Section should be challenged to complete this effort in advance of this deadline. If this plan is not implemented consistently across the ten years, we fear that little progress will actually be made in the face of other competing priorities. We believe that each year of the State's Capital Investment Plan should show a relatively equal apportionment of funding to accomplish this goal. An open, transparent decision-making process that allows for public input on the setting of project priorities is further recommended.

It is BRPC’s recommendation that the strategy to electrify truck stops for the purpose of assisting with GHG emission reduction efforts be considered as an immediate strategy. Substantial emissions reductions are still required from the transportation sector to meet established targets. Further delaying the implementation of this strategy is counter intuitive.

MassDOT Response

Thank you for your comments.

We have added language to highlight the importance of rural freight corridors.

A detailed map of rail lines is provided in the Massachusetts Rail Plan, Figure ES-4.

Bridges are prioritized based on safety and other factors through the bridge program. Bridges may be included on Critical Rural or Critical Urban Freight Corridors.

Locally owned assets may be added to the National Multimodal Freight Network (NMFN), through inclusion on the National Highway Freight Network (a subset of the NMFN) in the future as the need arises.

286K is prioritized in the Rail Plan and project programming is done through the CIP process.

MassDOT is conducting a truck parking improvement implementation study, which will make recommendations regarding potential locations for truck stop electrification.

B.3 Bev, Smithfield

Did anyone else notice that there is no mention of God in this report? Please remember that planning for the future is not only the job of men, but of the Lord our God. "For I know the plans I have for you, plans to prosper you and not to harm you, plans to give you hope and a future." Jeremiah 19:11 (NIV)

MassDOT Response

Thank you for your comment.

B.4 Jillian Bukhenik, Trucking Association of Massachusetts

TAM has been the voice of the trucking industry in Massachusetts since 1919. Membership on over 250 trucking companies (small and large). Significant user of our roads and bridges and significant creator of jobs within the Commonwealth (1 in 29 jobs within the Commonwealth associated with motor carrier industry). TAM has identified seven areas for further comment and, in some cases, request for amendment. TAM respectfully requests that the following comments and / or amendments by incorporated into the report.

Input from Industry (4.1; page 4-42) *[now page 4-43]*. TAM wholeheartedly encourages MassDOT to form a Motor Carrier Advisory Council. As commercial motor carriers are one of the most heavily regulated industries in the Commonwealth, the creation of a Motor Carrier Advisory Council ("Council") comprised of representatives from state regulatory agencies and industry groups to coordinate efforts in creating a cogent and connected transportation system would create open communication between state regulatory agencies and impacted industry groups in order to work together to regulate and maintain a transportation system that balances the needs of commercial users, residents and government agencies. Forty states currently have a Motor Carrier Advisory Council, including Connecticut. The Connecticut council is run through the Connecticut Department of Transportation and encompasses a wide variety of industry groups and state agencies including the CT Department of Public Safety, the CT

Department of Transportation, and the CT Motor Carrier Association, among others. According to the American Transportation Research Institute, 87% of goods are moved by truck in Massachusetts. In order to properly regulate the industry and to prevent an adverse economic impact on the economy of our state, it is imperative that this Council be created. As you know, the Commonwealth is faced with a growing number of challenges in transportation and will continue to face these obstacles over time. It is ideal to have a Council that can work together through the various issues allowing each agency or industry representative to better serve the Commonwealth. While TAM has filed legislation (HB3445) creating this very Council in statute, this is something that MassDOT can, and should, do administratively.

Truck Parking / Infrastructure Needs (4.1; page 4-42) *[now page 4-43]*. TAM is pleased that the Freight Plan speaks directly to the importance of the Commonwealth's infrastructure as it relates directly to trucking. In particular, TAM cannot emphasize enough the importance of truck parking or areas where drivers may rest to comply with federal regulations governing a driver's hours of service. The Commonwealth, for the safety of the occupants of commercial and passenger vehicles, needs to ensure the easy access to truck stops and rest areas. As mentioned previously, TAM views this issue as an issue of both short- and long-term need. With respect to infrastructure such as road and bridge improvements for reducing congestion and improving public safety, TAM appreciates MassDOT's commitment to resolve issues associated with the I-95/I-93 interchange and the I-495 / I-90 interchange, among many of the other areas of identified concern. The Commonwealth's economic growth, as well as its efforts to improve public safety and reduce environmental harms, are directly related to addressing these problem areas in a timely manner.

Routing (4.1; pages 4-43/4-44; also 5.0; 5-59) *[now pages 4-44 and 5-61]*. TAM urges the Committee to closely examine any effect that routing restrictions or truck exclusions have on the seamless transport of goods from one location to another in the most efficient and safest manner. Too often, the trucking industry has seen municipalities try to enact routing restrictions – whether directly or indirectly – without seeking input from MassDOT or neighboring communities. Truck route restrictions in one municipality often have a dramatic effect on vehicular traffic - truck or otherwise - in neighboring municipalities. Put simply, one municipality's routing restriction not only dictates what may occur within its geographic boundaries, but what must occur outside of its boundaries. Accordingly, such routing decisions require more thorough study in accordance with federal law and regulations as well as state law governing the same. TAM encourages MassDOT to amend the draft report to include a statement that MassDOT is the lead entity for all routing decisions, responsible for ensuring the cogent and interconnected network of roadways in consultation with municipalities. (For example, see 5.0 (Implementation); page 5-59, where responsibilities for MassDOT are laid out.) While the Freight Plan tends to lump all transportation of goods in one category, it should also be noted that hazardous material routing is currently a patchwork of restrictions. The draft report should include a recommendation that MassDOT undertake a

specific routing study for the transport of hazardous materials throughout the Commonwealth generally, but specifically in the greater Boston metropolitan area where a number of municipal hazardous material routing restrictions prevent efficient connectivity from one municipality to the next.

Workforce Development (4.1; page 4-45) *[now page 4-46]*. TAM applauds MassDOT for recognizing the workforce needs of the trucking industry. As you may know, the Commonwealth's economic development plan – "Opportunities for All: Making Massachusetts Great Everywhere" – prioritizes the alignment of training efforts with employer needs, and is a critical step in establishing the framework for the Massachusetts Skills Gap Grant Program. Section 94 of Chapter 219 of the Acts of 2016 takes this initiative a step further and provides a reinvestment and training program for a key workplace sector. This program recognizes that the future of many industries rely on the availability of a skilled workforce that can adapt to continued modern technological advances. Within the trucking industry, new technology and machinery are constantly introduced. Engine technology continues to advance, leading to greater fuel efficiency, reduction in idle times and the production of less emissions. These engines are complex work systems that require repair and maintenance by skilled individuals. Unfortunately, the presence of a skilled mechanics and technicians is greatly reduced from what it used to be. With a continued decline in the skilled workforce of mechanics and technicians, trucking companies will incur higher costs and, eventually, be forced to locate where the skilled workforce exists. Accordingly, TAM encourages the amendment of the Freight Plan to specifically reference the need to continue to support and fund programs like the Massachusetts Skills Gap Grant Program, which directly fund the training of tomorrow's diesel and alternative fuel engine mechanics.

Encouraging Environmental Responsibility (4.1; pages 4-45/4-46 & 4.3; page 4-50) *[now page 4-47 and 4-51]*. TAM agrees that technological advances may now make environment-friendly options more practical. The key to the adoption of this technology, however, is the establishment of incentives for the purchase of this new technology or incentives that drive the purchase of this new, cleaner technology. In the first instance, TAM supports legislation seeking to provide tax credits under Mass. Gen. Laws ch. 62, § 6 for the purchase of medium and heavy duty commercial vehicles that use alternative fuels, by Massachusetts companies. (HB2585). Under this proposed law, "alternative fuel" is defined in the proposed legislation as electricity, liquid petroleum gas, natural gas, or hydrogen fuels. These credits would be applicable up to $250,000 per fiscal year per company with a tax credit of $20,000 for the purchase of heavy duty vehicles, and $12,000 for the purchase of medium duty vehicles. According to the United States Dept. of Energy, numerous states already offer these types of incentives. (http://www.afdc.energy.gov/laws/). The incentive structures of this bill will produce significant returns for both the industry and the Commonwealth. By providing a tax credit for the purchase of an alternative fuel heavy-duty vehicles and alternative fuel medium-duty vehicles, these types of vehicles will be purchased more frequently by Massachusetts companies. This will result in a more modern transportation fleet, continuing to make the

State's transportation sector more environmentally friendly and as fuel efficient as possible. As alternative fuel vehicles replace existing vehicles, a further reduction in CO2 and NOx emissions will occur due to the increased number of alternative fuel vehicles on the road. While the current use of ultra-low sulfur diesel (ULSD) and 2010 EPA compliant engines have reduced emissions in vehicles significantly, this legislation will ensure that the progress we have seen over the last decade in emissions reduction continues in a positive direction. As a result, the Freight Plan should reference HB 2585 or, at a minimum, the importance of incentivizing the purchase of alternative fuel vehicles. In the second instance, TAM encourages MassDOT to include a reference to the need for legislation that drives best management practices that encourages environmental responsibility in the Freight Plan. To this end, TAM urges MassDOT to include a reference to the importance of legislation to create an exemption from the taxation of rolling stock within the Commonwealth within the document. By changing the existing tax policy, this legislation, HB3916, will lead trucking companies to invest in new, cleaner trucks now instead of using existing equipment until the very last possible moment and purchasing new trucks much later. Finally, TAM applauds MassDOT for recognizing that there needs to be greater attention paid to the electrification of trucks stops and rest areas. Electrification allows truck drivers to run their ancillary power through means other than the diesel engine (i.e. auxiliary power units). This reduces emissions and costs significantly. One additional recommendation for the Freight Plan is increasing the weight exemption for Auxillary Power Units (APUs) from 400 lbs. to 550 lbs. as other states, including New Hampshire provide. An APU weight exemption allows for a truck's total weight to omit the weight of the APU so that a trucking company is not penalized for being environmentally conscious. While TAM filed and passed legislation establishing a limit of 400 lbs.; many states have now increased the limit to 550 lbs. in light of newer technology. Accordingly, the need to increase the APU weight exemption to 550 lbs. should be included within the Freight Plan.

Driver-Assisted Technology / Vehicle Autonomy (4.3; page 4-55) *[now page 4-57]*. TAM acknowledges that autonomous or driver-assisted technology is advancing at a rapid pace. TAM urges MassDOT to include language in the Freight Plan relative to concerns about the potential impact of regulating all autonomous vehicles in the same manner. The regulation of autonomous vehicles carrying passengers and autonomous vehicles used in the trucking industry should not necessarily be the exact same. TAM recognizes the importance of considering regulations on passenger vehicles at this time as MassDOT is currently doing, but autonomous technology as related to autonomous trucks is still developing and will have the ability to benefit all aspects of the industry. Regulations on passenger vehicles that impact driver-assisted or autonomous trucks may inadvertently limit the use of these autonomous trucks in the future. A fully autonomous truck will have the ability to identify, interact with and safely react to all aspects of the driving environment without a driver in control of the wheel. However, it may be decades before this vehicle could be commercially available. Accordingly, TAM respectfully requests that the

Freight Plan include this cautionary note about regulating autonomous vehicles in a manner where “one size fits all”.

Public Safety / Sideguards (4.3; pages 4-55/4.56) *[page 4-58]*. TAM's membership is focused on safety first and foremost. Reducing traffic fatalities involves education and enforcement of the laws for all parties who share the road. With respect to non-vehicular traffic, TAM wholeheartedly supports infrastructure improvements to roads and bridges that protect cyclists and pedestrians. (i.e. bike lanes; hardened barriers, where appropriate; improved signage and markings, etc.). Further, as referenced above, the implementation of tax incentives for the purchase of alternative fueled vehicles (HB2585) or the elimination of the rolling stock (HB3916) will cause trucking companies to purchase new, safer trucks with technological improvements such as disc brakes, collision mitigation systems, lane departure warnings and in-cab cameras, in addition to their cleaner environmental footprint. The need for these types of initiatives should be referenced in the Freight Plan. However, while the inclusion of a section on "sideguards" in the Freight Plan is well-intentioned, there are potentially significant Constitutional issues and federal laws governing interstate commerce associated with requiring sideguards which lead to its omission from the Freight Plan. Further still, caution should be urged when recommending the creation of an unfunded mandate for all government entities as well as private entities. The Commonwealth, which uses a significant number of vehicles affected by a potential mandate, will be required to expend significant resources to comply with it. With that in mind, TAM respectfully request that this section be deleted from the Freight Plan as there are more effective means for improving safety for all road users – whether through improved infrastructure, education or incentives for the purchase of safer and cleaner trucks.

MassDOT Response

Thank you for your comment. MassDOT is aware of and monitoring pending legislation affecting various aspects of the trucking industry. MassDOT always welcomes the opportunity to work with its industry partners.

Regarding the transport of hazardous material: MassDEP will be conducting a Commonwealth-wide Oil & Hazardous Material (OHM) Commodity Flow Study, which will provide a comprehensive analysis of the types of bulk hazardous materials being transported into, out of and through Massachusetts, and will include roadway, rail, air, and water transportation.

We have added a reference to the Massachusetts Skills Gap Grant Program.

Analyzing specific tax credits was outside the scope of this Freight Plan, but MassDOT is aware that several pieces of legislation are under consideration by the Legislature. Regarding APU weight exemptions, MassDOT would need to further look into the implications of this, but cannot pre-empt any required statutory changes to allow for the higher exemption.

The Autonomous Vehicles Working Group is responsible for advising MassDOT on matters related to autonomous vehicle

policy in Massachusetts, therefore the Freight Plan does not make any specific recommendations regarding such issues.

We are aware of interstate commerce laws. Our strategy regarding side guards is to encourage them, not to require them.

B.5 Matt Burwell, Legal Sea Foods (FAC Member)

Hi Gabe,

I hope you're doing well. I've reviewed the draft freight plan, and wanted to share some thoughts with you. (Apologies that I'm just getting this to you right before the close of the comment period.)

Overall, the plan is excellent. It covers a great deal of material in a manner that is well thought-out and highly readable. And the robust scenario planning process ensures that the plan will be applicable under a variety of different potential futures.

Given Legal's extensive urban presence, it was very gratifying to see the Freight Focus on Urban Supply Chains (Page 1-8) *[now page 1-9]*, as well as the discussion of delivery areas in urban areas (page 4-51) *[now page 4-52]*.

The issue of maintaining freight access is particularly important to our industries (seafood processing and restaurants), which was covered very well in 4-43 and 5-75.

On page 2-19 *[now page 2-21]* the plan notes that "MassDOT supports communities in developing Complete Streets plans that include welcoming sidewalks, greenery, parklets, bicycle lanes, transit lanes, and street parking. These beneficial uses compete with loading zones for the same space, and properly accommodating trucks is important to ensure the safety of pedestrians and cyclists." This is a very important point, and the plan might elaborate on this a bit more. As Complete Streets becomes more widespread, it will be important to ensure that the interests of freight-dependent constituencies are adequately represented. If space permits, it might be helpful for the plan to include additional insights or suggestions on how that could be accomplished, perhaps based on the experience of jurisdictions that have successfully struck this balance.

Typo on page 1-6 *[now page 1-5]*. The word "of" is missing in the phrase "contribute to the achievement [of] a 25% statewide reduction in GHG."

MassDOT Response

Thank you for your comment. Complete Streets is meant to advance context-sensitive designs, therefore this Plan does not prescribe specific solutions, but best practices can be found in Chapter 5 of the MassDOT Complete Streets Funding Program Guidance.

The typographical error has been corrected in the final version of the document.

B.6 Thomas Cosgrove, NFI Industries (FAC Member)

All of the topics that I felt were important to my end of the industry were discussed and are covered in here. It means a lot to see that focus is placed in all the right places. If the follow-up

process works, future efforts should be entirely different to further improve the industry and its capabilities.

MassDOT Response

Thank you for your comment.

B.7 James Czach, Town of West Springfield

Thank you for the opportunity to comment on the Draft Massachusetts Freight Plan. I offer the following comments:

First and Last Mile –The Town of West Springfield has a CSX Intermodal Facility in the southern portion of the community. There are also trucking companies in very close proximity to the rail yard. Therefore, there is a substantial amount of large tractor trailer traffic to and from Interstate 90, 91 and 291. This section indicates that most of the shipments are made by small trucks, vans, bicycles etc. However, in West Springfield most are made by large tractor trailer trucks. I suggest large trucks be included in this definition. These vehicles are more likely to have decreased efficiency when directed to roadways not designed for truck use or have vertical clearance issues with bridges. In addition to this, some of these vehicles travel to and/from distribution centers and not the home, store or business. Maintenance and preservation of these connections should be a high priority.

Clearances - The report discusses double stack rail clearances however doesn't specifically address vertical clearances between roadways and railroad bridges in detail. These are obstacles/bottlenecks for large vehicles and have narrow roadway widths making application of Complete Streets treatments for bicyclists and pedestrians very difficult. In addition to this, trucks hit these bridges even when advance notification is provided creating safety issues. This unfortunately occurs in our community. The CSX intermodal facility in West Springfield has limited access to the interstate system due to a low clearance bridge. This bridge restricts access to Memorial Avenue (Route 147). This roadway provides a direct connection to Route 5 and then the Interstate System. There is a project that has been in design to replace the bridge and improve the clearances. It has been included in the Pioneer Valley Regional Transportation Plan for many years. Advancement has been difficult due to requirements of the railroad. An immediate strategy should be to identify these bottlenecks, work cooperatively with the rail owners and address the vertical and horizontal clearance issues at these railroad bridges.

At Grade Rail Crossings – In addition to being major safety concerns, they can also be impediments to the movement of freight and contribute to greenhouse gases. An example is one that the community of Agawam and West Springfield experience at an at-grade railroad crossing in West Springfield. There are times during the day that the railroad blocks the roadway connecting the communities for extended periods of time. Therefore, vehicles have to wait and idle for long periods of time. This has a detrimental effect to air quality (greenhouse gases). These delays also impact the movement of freight on the local roadways as well as general users of the transportation system. The plan should include addressing these situations.

Airports - Although not in the State of Massachusetts, Bradley International Airport is in very close to and services Western Massachusetts. It has similar freight carriers to Logan such as Federal Express and UPS that access our State via I-91. Has this been considered in the plan?

MassDOT Response

Thank you for your comment. "First and Last Mile" (as we have applied it) refers to the connection between distribution centers and retail centers or consumers, and vice-versa. The movements of goods you describe are (by our treatment) part of the en-route segment of the trip between origin and destination gateways.

The vertical clearance issue requires a multimodal response and will be called to the attention of both the MassDOT Highway Division and Rail and Transit Division.

At-grade rail crossings are addressed in more detail in the Massachusetts State Rail Plan*.*

The Freight Plan does consider Bradley International Airport and other out-of-state airports. In order to maintain legibility of the map in the printed report, we had to limit the field of view.

B.8 Donald DiMauro, Foxborough

First comment

It is all well and good that the State plans to improve our freight lines and increase train traffic, but not so if one lives near the train tracks.

Our County St neighborhood in Foxboro runs parallel to the Framingham Secondary Line that goes from Mansfield to Gillette Stadium and on to Framingham. The trains operate at night, usually at 1:00 am and 4:00 am so it is difficult to imagine a good night's sleep with all the clamor and disruption of a freight train operating in your neighborhood. The commotion these trains generate is seismic in scale and hellish in sound. And for good measure, the dutiful driver is obligated to blast his horns at our Spring St intersection as if he's approaching the entrance to Grand Central Station. Very few cars pass this isolated track during those lonely hours.

To make matters more unpleasant, this past summer, our narrow roadway accommodated eighteenwheeled truck traffic hauling ballast down to the train yard that, at times, numbered ten trucks per hour, all day long. These drivers seemed to prefer our road to the streets actually built for commercial traffic. How ironic it is that these trucks delivered the goods necessary for track improvement to facilitate greater freight traffic and further disrupt the health and well being of our neighborhood. Our meetings with Town Officials only confirmed our fears that more trains, and in time, a commuter rail also sharing this line from Mansfield to Gillette, will create an unmanageable living environment in an area already compromised by intolerable noise.

This noise is unhealthy and residents, living under normal conditions, can bear only so much at these high levels. These disturbances cause sleeping problems, insomnia, high blood pressure, anxiety, and, as studies will verify, antisocial behavior. In fact, the only sound worse than a freight train is the roar of a jet plane flying at 500 feet. If this idea of increased freight transport is the grand new vision of the future, then what innovations toward noise abatement are the State considering for improving this 200-year-old technology? Ideas like quieting wheel to track noise and eliminating loud squealing brakes. Or the installation of barriers to muffle the sound and soften the din of these fifteen ton behemoths. Germany is working and requiring that their trains retool and conform to improved noise abatement practices by 2020. Is it the State's only concern that these trains operate and deliver goods with no regard to the health of its citizens?

I trust that judgment was sound for leaders to spend a million dollars per mile for freight trains to travel from Mansfield to Framingham. I also recognize that this purchase was made to connect the Fairmont Line to Gillette Stadium. But this commitment to rail transport needs more work than just improving the train tracks to deliver goods. It's more complicated than that. This line sits behind the yards of our homes. These trains stall and block intersections in our small neighborhood with a line of freight cars that stretch a mile long and take minutes to pass. These trains work and idle upwards to an hour at all times of the night rattling windows, shaking our homes and screeching awful noises while we are supposed to rest. These trains disturb our nights and if you are lucky enough to doze through what feels like a minor earthquake, the blast of the horns will make certain you wake up. These trains run roughshod through our area.

To make this project succeed, the trains should follow on a schedule that residents can live with. Concentrate on noise abatement. Stop blowing whistles at side street intersections. Car drivers do not need horns to know a train is coming at 1:00 or 4:00 am in the morning. And finally, have concern for the safety of your citizens. Stop the trains from blocking intersections so emergency vehicles can pass if they need to. If these few things cannot be accomplished then either the trains or the residents are situated in the wrong place. At times I do wonder whether I reside in a neighborhood or a train yard. A lot more work is necessary to integrate the increased use of an old style transportation idea with our 21st lives. But citizens should expect and receive a certain quality of life that does not include freight trains running right through their houses.

Second comment

I'm not certain if I was dreaming a nightmare about a gigantic fire-breathing monster threatening outside my front door at 5 am this morning, grumbling and thundering a seismic roar punctuated by the kind of high powered pressure hiss that erupts from a geyser like Old Faithful, or whether I was actually wide awake and it was merely the good ole neighborhood freight train operating under the new Freight Plan just before the sun rises.

Brave men used to need to slay dragons. Our bucolic setting trembles in the early morning under siege by the unbearable din of this daily freight only sitting and idling right outside of our doorways for over one and one-half hours. Can no one rid us of this monster?

I fear my worst nightmares have come true.

Third comment

Dear Mr. Sherman,

It is all well and good that the State plans to improve our freight lines and increase train traffic, but not so if one lives near the train tracks.

Our County St neighborhood in Foxboro runs parallel to the Framingham Secondary Line that goes from Mansfield to Gillette Stadium and on to Framingham. The trains operate at night, usually at 1:00 am and 4:00 am so it is difficult to imagine a good night's sleep with all the clamor and disruption of a freight train operating in your neighborhood. The commotion these trains generate is seismic in scale and hellish in sound. And for good measure, the dutiful driver is obligated to blast his horns at our Spring St intersection as if he's approaching the entrance to Grand Central Station. Very few cars pass this isolated track during those lonely hours.

To make matters more unpleasant, this past summer, our narrow roadway accommodated eighteenwheeled truck traffic hauling ballast down to the train yard that, at times, numbered ten trucks per hour, all day long. These drivers seemed to prefer our road to the streets actually built for commercial traffic. How ironic it is that these trucks delivered the goods necessary for track improvement to facilitate greater freight traffic and further disrupt the health and well being of our neighborhood. Our meetings with Town Officials only confirmed our fears that more trains, and in time, a commuter rail also sharing this line from Mansfield to Gillette, will create an unmanageable living environment in an area already compromised by intolerable noise.

This noise is unhealthy and residents, living under normal conditions, can bear only so much at these high levels. These disturbances cause sleeping problems, insomnia, high blood pressure, anxiety, and, as studies will verify, antisocial behavior. In fact, the only sound worse than a freight train is the roar of a jet plane flying at 500 feet. If this idea of increased freight transport is the grand new vision of the future, then what innovations toward noise abatement are the State considering for improving this 200-year-old technology? Ideas like quieting wheel to track noise and eliminating loud squealing brakes. Or the installation of barriers to muffle the sound and soften the din of these fifteen ton behemoths. Germany is working and requiring that their trains retool and conform to improved noise abatement practices by 2020. Is it the State's only concern that these trains operate and deliver goods with no regard to the health of its citizens?

I trust that judgment was sound for leaders to spend a million dollars per mile for freight trains to travel from Mansfield to Framingham. I also recognize that this purchase was made to

connect the Fairmont Line to Gillette Stadium. But this commitment to rail transport needs more work than just improving the train tracks to deliver goods. It's more complicated than that. This line sits behind the yards of our homes. These trains stall and block intersections in our small neighborhood with a line of freight cars that stretch a mile long and take minutes to pass. These trains work and idle upwards to an hour at all times of the night rattling windows, shaking our homes and screeching awful noises while we are supposed to rest. These trains disturb our nights and if you are lucky enough to doze through what feels like a minor earthquake, the blast of the horns will make certain you wake up. These trains run roughshod through our area.

To make this project succeed, the trains should follow a schedule that residents can live with. Concentrate on noise abatement. Stop blowing whistles at side street intersections. Car drivers do not need horns to know that a freight train is approaching at 1:00 or 4:00 am in the morning. And finally, have concern for the safety of your citizens. Stop the trains from blocking intersections so emergency vehicles can pass if they need to. If these few things cannot be accomplished then either the trains or the residents are situated in the wrong place. At times I do wonder whether I reside in a neighborhood or a train yard.

A lot more work is necessary to integrate the increased use of an old style transportation idea with our 21st lives. But citizens should expect and receive a certain quality of life that does not include freight trains running right through their houses. We have met with Foxboro Town Officials to discuss this problem. Our State Representative, Jay Barrows, has arranged a meeting with neighbors and Mass Dot Officials on 12-4, in Mansfield, though that date is not yet confirmed. I believe that if your presence at this meeting may lead to a better understanding of The State's Plan.

Sincerely,

Donald DiMauro

Fourth comment

Thanksgiving morning here on County St, in Foxboro, it's only 4:30 am and the freight train idles right outside of our windows behind our backyards just sitting and roaring like a jet plane, or a tornado, or maybe a volcano, or perhaps all three at once? I don't know anymore, I can no longer summon the words required to accurately describe this daily debacle that is our neighborhood freight train. At 5:50 am it decides to move and begins to shudder and thunder and screech its way forward finally leaving our neighborhood but blasting horns to wish us all a nice quiet Thanksgiving at the start of our day. After 15 minutes I could still hear the rumble and the horns of this half-mile length of freight pass through town and slog its way into Walpole. Who does this? And what is the name of an institution that makes life this miserable for its citizens?

MassDOT Response

M.G.L ch.160 §151 governs the obstruction of a public way by a railroad corporation. Enforcement is conducted by local

police. Regarding train idling reduction technologies, MassDOT continues to discuss the feasibility of APUs with the relevant railroads, however there are technical barriers to implementation. Locomotives must be equipped with the necessary devices, but due to the fact that locomotives are used nationally, it is difficult to equip them for use in just one state.

B.9 Eastern Massachusetts Freight Rail Coalition

Eastern Massachusetts Freight Rail Coalition (EMFRC)

Input to 2017 Mass DOT Freight Plan

EMFRC largely focuses on freight issues as they affect the region's economic development. The EMFRC was formed from a group of Freight Advocates/consultants that were part of the membership of the Boston MPO Advisory Council Freight Committee. Members of the Coalition include: Walter Bonin served on a freight subcommittee for the Boston Region Metropolitan Planning Organization and chaired the Marlborough Mayor's Transportation Task Force; Joshua Davidson, associate editor Atlantic Northeast Rails & Ports; Frank Demasi, who also served on a freight subcommittee for the Boston Region Metropolitan Planning Organization; Evangelos Efstathiou, Skysail Advisors; and Chop Hardenbergh, editor Atlantic Northeast Rails & Ports. Bonin and Demasi attended the Advisory Committee meetings on the draft freight plan.

MassDOT attitude toward freight rail: Most of us have observed the evolution of freight rail in eastern Massachusetts over decades, and in particular MassDOT's role in the evolution. We are struck by two things: First, some people in the department, such as Jody Ray, have been responsive to the plaints of the Commonwealth's many freight railroads. Second, no one or no place in MassDOT has the visibility and the formal responsibility for freight rail, while formal responsibility for transit is enshrined in the MBTA (with MassDOT having a partnership role).

PROPOSAL 1: CREATE A FORMAL OFFICE OF FREIGHT RAIL. This is #1 priority for a change in the Freight Plan. In order to ensure that freight rail has ongoing formal and fiscal awareness from MassDOT, we propose the General Court create an Office of Freight Rail, or at the least an Office of Advocate for Freight Rail. A senior staff person would head it, on a par with the other offices. The Office would have formal responsibility for at least three areas:

- 1.1 IRAP and other freight rail assistance. At this point, those in charge of the Industrial Rail Access Program have only begrudgingly made public the projects for which the public pays the majority. The Office would change that by being at least as public as, say, the Green Line Extension Project.
- 1.2 Passenger/freight interactions. The Office will have a mandated voice in all MBTA/MassDOT commuter rail decisions which will affect the ability to move freight by rail.

- 1.3 Freight/community interactions. The Office will have a mandate to receive all complaints from the public about existing freight operations (idling, late night noise, stuck grade crossing gates, etc), and to give early warning to communities where an expansion or restart of freight rail service is contemplated.

PROPOSAL 2: PROVIDE SUBSIDIES TO FREIGHT OPERATION EQUAL TO ROADS. While rail is given credit for moving freight with less pollution and no wear and tear on highways, it receives no financial reward for doing so. We propose a pilot project which will give per ton subsidies to freight by rail which pays the railroad/shipper a portion of the savings to the Commonwealth for pollution and highway maintenance [see MassDOT language in 4.1 which confirms the savings].

PROPOSAL 3: STATE OWNERSHIP OF FREIGHT RIGHTS ON STATE LINES. While this history glosses over some details, essentially following the creation of Conrail and then the assumption of Conrail freight rights by CSX in the Commonwealth, the rail lines southeast of Boston were balkanized. At this point, FIVE different freight railroads will operate over the state-owned lines: CSX, Mass Coastal, Bay Colony, Fore River, and whoever assumes operation of the Southeast Lines in 2018 following the completion of the MassDOT RFR. The balkanization could have been avoided had the state chosen to acquire the freight rights and put them out to bid as other New England states have done, rather than follow the traditional path of permitting the incumbent to retain freight rights on public-owned roads. The Commonwealth can hardly do worse than what we have achieved to date: a private-sector dystopia which can be ascribed in part to the extra administrative costs and headaches of interchanging the light carload traffic among the five railroads in the region. Public priorities may provide a more rational prism through which to view the rail network

- 3.1 Obtain freight rights when acquiring rail lines. We propose that whenever the state, in the future, acquires rail lines that it, rather than the incumbent, own the freight rights.

- 3.2 Put out to bid large networks. The retention of freight rights would permit the state, in the example of the lines east of Framingham, to put the entire 'Cranberry Division' out to bid. This would echo the MBTA approach to commuter rail: the entire network is put out to bid by one operator. The state has a popular public purpose to substantially upgrade the existing rail network to improve transit throughout the state, which spreads prosperity. This purpose can abet the rationalization and improvement of freight rail service, and orient the state industrial development policy toward location of rail-served distribution points.

PROPOSAL 4: RETENTION OF RAIL ACCESS TO CONLEY TERMINAL. Retaining freight rail access to South Boston via the Boston Terminal Running Track and extending commercial rail to the Port of Boston's Conley Container Terminal is crucial to Massachusetts and New England's competitiveness in the

global marketplace. This dedicated rail freight corridor exists and is not utilized. Improving the rail freight corridor's utilization will substantially benefit the Commonwealth by reducing the strain on the highway network, reducing traffic noise and air quality impacts, and diverting the expected increase in truck traffic away from residential and high-value retail office areas.

- 4.1 TIGER language supporting the rail access. In a 2009 federal TIGER grant application, MassPort cited the Track 61 Rail Extension "as a key component of strategic and master plans to expand deep-water berth access and reintroduce on-dock rail to the Port of Boston … as already designed and permitted by MassPort will result in an annual reduction of 4.45 million VMT per year. The elimination of these VMT, in turn, facilitates a public benefit of over $40 million per year, when air quality benefits are monetized at EPA benefit-per-ton standards."
- 4.2 Non-freight use of the Running Track. MassDOT, the Convention Center Authority, and the MBTA prioritized non-freight use of these assets to further their short-term priorities: the Authority paved over half the First Street Yard for parking. The T plans to use the Track as the Red Line Test Track through 2023. which blocks the ROW for freight and impedes future access to Conley, the use of the yard, and track for freight.
- 4.3 Need to maintain truck traffic through South Boston at current level. The $350 million dollar Harbor Dredging project to open Conley Terminal to larger ships which commenced in September 2016 is estimated to double Conley's volumes to 450,000 TEU by 2022. Massport has indicated the potential to increase Conley's capacity to over 800,000 TEU per year. MassDOT must divert a large portion of this to rail at Conley using Track 61, to a container terminal on Route 128 or I-495 served by direct rail to Conley. The terminal will handle the tripling of boxes through Conley while avoiding a growth of truck traffic.

MassDOT Response

Thank you for your comment. MassDOT will take your first proposal under advisement.

In regard to your second proposal, the funding levels for road and rail infrastructure stem from federal funding policy. State highway funding is typically matched by 80% federal funds, whereas rail does not typically receive any federal match. MassDOT must also be attentive to the adequacy of the public benefit that is received when it considers investing in assets.

Rail ownership and operation often has a complicated structure. While we cannot speak to past acquisitions, we will certainly take your suggestion into account in any future acquisitions.

Massport is investing in improvements to Conley Terminal, including participating in the Boston Harbor Dredging project, development of the recently opened Thomas Butler Dedicated Freight Corridor, and upcoming construction of landside improvements including a new deepwater berth to accommodate larger vessels. Due to landside constraints,

Massport has carefully programmed Conley to accommodate efficient existing and future operations; freight rail would require significant physical footprint on the site.

B.10 Carmina Fernandes, Ludlow

The current freight options are antiquated, not cost effective (a dinosaur industry as Elon Musk has called it), and should be modernized.

The global and local economies are strong and becoming more service oriented, global trade in machinery and chemicals is growing, and sea shipping is changing to accommodate the new capacity through the Panama Canal and perhaps through a newly opened Northwest Passage. Massachusetts is primed to take advantage of these changes with opportunities to export high value commodities. Also, with the global economies becoming ever smaller and consumers doing more and more online shopping, the need for quick and effective freight is essential.

Massachusetts needs to be forward thinking. It should consider an complete revamping of its train transportation/freight services. It should invite young innovative thinkers to come up with fresh more affordable ways to transport freight and people between the Northeast. Take for example the sonic, levitating, zero-emissions Hyperloop—potentially as fast as a plane, cheaper than a train, and usable in any weather and that can transport both passengers and freight, this should be where Massachusetts invests in the future as a means of a faster and convenient and more affordable option to travel throughout the State without relying on their cars or short-haul airplane flights, or antiquated freight cargo to move commodities across the State.

While our current president is looking backwards by investing in coal, Massachusetts is doing the same by investing in the dinosaur freight carriers. China is going to be the next leader by investing in the future. Massachusetts should do the same. Just imagine the attention that business and industry would have in this state if it had the most advanced freight and transport system in the world..

MassDOT Response

Thank you for your comment. The scenario planning approach is intended to address an uncertain future.

B.11 Laura Gilmore, Massport

Good Morning Gabe,

Thank you for the opportunity to comment on the draft of the Massachusetts Freight Plan. The attached letter contains comments from the Massachusetts Port Authority on this draft plan. A hard copy of this letter will be mailed to your attention, as well.

Please don't hesitate to reach out with any follow up questions and thank you for your hard work getting this plan to this point.

Best Regards,

Laura

Hello Gabe,

The following are minor changes recommended with italics indicating additions and strikethroughs for suggested deletions:

- Page viii – there is a bookmark error in table of contents
- There are a few points in the text where we would suggest changes to descriptions about Massport:
- Page 4-44 *[now page 4-45]*, we would recommend: "…the challenge has become especially acute in the South Boston Waterfront/Innovation District, which has become a booming mixed-use development area." Delete the remainder of the sentence, starting with ", driven in part by …"
- Page 5-61 *[now page 5-63]*: "public authority, but not a Massachusetts government agency."
- Page 5-59 *[now page 5-61]*. In the last paragraph on the page, please strike the full sentence that begins "This places it in the dual position…
- Page 4-44 *[now page 4-45]* part 2, second sentence, please add Massport to list of agencies.
- Page 4-44 *[now page 4-45]*, second column top bullet – please add Massport to list of agency partners for Cypher-E
- Page 4-52 *[now page 4-53]* and Figure 4.2 - indicates that "This plan makes no recommendations about air or seaport facilities not owned by Massport." Could you please clarify why only Massport airport and seaports discussed in recommendations?
- There are a few places in the plan where acronyms are used but not defined in text. These include page 4-46 (OS/OW) and page 3-24 (FAF).

MassDOT Response

Thank you for your comments. All requested edits have been made in the final version of the document.

The strategies and recommendations identified in the Plan apply to non-Massport facilities as well, however through the stakeholder process we were able to provide more detail related to Massport facilities. This level of detail is warranted given the relative size of Massport compared to other facilities.

B.12 Charles Hunter, Genesee & Wyoming Railroad Services (FAC Member)

Hi Gabriel:

While I find this information about tracking and identifying highway infrastructure sate of good repair needs, I do not find anything of the same nature for railroads, especially freight railroads. I think this should be covered in the Plan. The state's IRAP program has some limited funding for freight rail

infrastructure projects. Making the identification of needs a priority should help to address the need for increased funding in this program.

"Infrastructure Improvements Improve the condition of freight network assets MassDOT currently tracks the condition of its highway pavement, bridges, tunnels, and signage through inspections and FHWA reporting. Further, MassDOT has significant records of the condition of rail track, right-of-way and bridges. From this data, MassDOT reported in 2016 that 444 of its roughly 5,200 highway bridges (9%), 2% of its lane-miles of Interstate pavement, and 13% of its non-Interstate pavement are in "poor" condition. It considers truck traffic when developing investments. Continued investment to improve the state-of-good repair of these assets – to inspect them, inventory them, and ensure that a minimal number of them are in "poor" condition – aligns with MassDOT's first investment priority. While MassDOT places its first priority on reliability when making capital investments, it is always possible to do more and to do better. Pursuing this strategy may involve: “Creation of a feedback mechanism for industry to report."

Thank you,

Charles Hunter
AVP Government Affairs
Genesee & Wyoming Railroad Services, Inc.
802-527-3434

MassDOT Response

Thank you for your comment. MassDOT would be interested in collecting and tracking this data from all railroads and would be happy to discuss.

B.13 Andrew Jennings, North Billerica

Comments on the DRAFT
Massachusetts Freight Plan

Submitted by:
Andrew Jennings
29 Talbot Avenue
North Billerica, MA 01862
December 6, 2017

Although the State Freight Plan may meet the Federal requirements for such a plan, it fails to inform voters and legislators about the key issues that face the efficient movement of freight within the state. This draft that we are asked to comment on fails to catalog the major issues impacting freight transport, shows significant modal biases, fails to acknowledge the regional nature of freight movements and facilities, fails to recognize the Commonwealth is a major freight user itself, and fails to set clear goals and measures for the Commonwealth to strive for.

The freight plan fails to acknowledge key issues.

The primary issue that the freight plan fails to raise is the issue of funding. Although the plan acknowledges that MassDOT

primarily funds its capital budget through bonds, and that a primary source of debt service for those bonds is the excise tax on gasoline and diesel, it fails to state that: 1) MassDOT's primary source of funding capital projects (the excise taxes) will shrink as more vehicles use alternative fuels, and 2) MassDOT's funding goals and its environmental goals are in conflict, as the excise tax revenues are based on activities that add greenhouse gases to the environment. Continued reliance on the excise tax for MassDOT capital funding will lead to inadequate transportation funding and a deterioration of the Commonwealth's transportation assets, making the state less competitive. Although this is hardly solely a freight issue, the problem must be acknowledged in the freight plan.

When a new system of user fees is developed, it must insure that vehicles with higher axle loads fully pay for additional highway construction and maintenance costs that the higher loads require. If those costs are not appropriately allocated, individual taxpayers will be burdened by overpaying their fees and the fees will bias the freight system towards highway use. The plan is also silent on the transport of hazardous materials, even though such transport is a major concern of abutters of transportation facilities. Shouldn't one of the proposed strategies of the freight plan be to encourage users of hazardous materials to minimize the transport of such materials and to encourage the use of the safest modes?

The freight plan is modally biased. The freight plan is supposedly a companion document to the rail plan. However, as of the due date for comments on the freight plan, the draft rail plan is not available. Logically, I cannot fully comment on the freight plan without seeing the rail plan. The modal bias of the freight plan is clearly indicated by the lack of acknowledgement of the ferry mode. Two of the fourteen traditional counties in Massachusetts receive virtually all of their freight using an Authority of the Commonwealth. The failure to mention unique requirements of those counties or the authority that provides the service in the freight plan is a clear indication of the modal bias. The plan also fails to mention pipelines, even though when pipeline capacity is limited, movements shift to surface modes, or to alternative products.

One of the strategies, albeit a hedging and shaping strategy, presented by the plan is to "encourage private industry to adopt short-sea shipping". Why is MassDOT only encouraging this mode? If the purpose of this strategy is to reduce congestion and reduce greenhouse gas emissions, shouldn't the strategy be to encourage use of any mode that reduces congestion and emissions? Shouldn't use of rail and water be similarly encouraged as they both achieve these goals?

The Commonwealth's historic highway bias has been an expensive bias. The North-South rail link should have been built as part of the Big Dig. A similar mistake is occurring today with the West Station Project. The freight plan needs to make sure that this historic bias is not perpetuated. The freight plan fails to acknowledge the regional nature of freight movements and facilities. To properly understand freight needs, one needs to understand flows, and a significant portion of the freight flows are interstate or international in nature. In order to understand

and plan for freight, one needs to understand, that particularly outside of the Boston area, the major flows connect users in the Commonwealth with out of state facilities such as Bradley Airport, and the ports of Providence and New York. A good freight plan would show such facilities on the maps, and discuss their role in Massachusetts freight flows.

Similarly the freight plan gives little information on the significant flows of freight that neither originate nor terminate in the Commonwealth. Those flows add to congestion, and excise tax may not be collected if the vehicle is not fueled in Massachusetts. Massachusetts needs to understand these flows and the user fee system needs to be structured so that the infrastructure and operating costs of these flows does not become a burden to movements that originate and terminate in the state.

The freight plan fails to recognize the Commonwealth is a major freight user itself. Quite possibly MassDOT itself, along with its contractors, is the largest consumer of asphalt, concrete, and salt in the Commonwealth, and is a major consumer of rebar and other construction materials. The freight plan should provide an indication of the impact of the movements of these purchases on the freight transport system, and assure readers of the plan that the sourcing, transport, and warehousing decisions for these materials are consistent with the goals of the plan, particularly the environmental goals, and that the transport selection insures mode neutrality.

The freight plan fails to set clear goals and measures for the Commonwealth to strive for. The freight plans section on performance measures (Section 5.5) is one of the shortest sections in the plan. All of the performance measures relate to highways and roads, none to the other modes. No history of these measures is presented so that the reader can get a sense of the trends involved. More performance measures should be included in the plan, particularly ones related to the environmental goals that Commonwealth has.

Conclusion. The freight plan does not meet the needs of the voters and legislators of the Commonwealth. At a minimum issuance of the final freight plan should be postponed until the rail plan and the freight plan can be looked at as the coordinated documents they are intended to be. In the meantime, while waiting for the rail plan to be issued, the freight plan should be redrafted to include a statement of key issues that need to be addressed, modal bias should be removed, clear performance measures, particularly environmental ones need to be added, and the historic tends of the performance measures need to be included.

MassDOT Response

Thank you for your comment. We feel this is a user-friendly document that highlights the key issues facing the Massachusetts freight network. We acknowledge that funding the transportation network presents challenges and tradeoffs, however it is not within the purview of the Freight Plan to propose changes to how transportation funding is administered.

Specific fees and taxes are outside the scope of this plan. Regarding the transport of hazardous material: MassDEP will

be conducting a Commonwealth-wide Oil & Hazardous Material (OHM) Commodity Flow Study, which will provide a comprehensive analysis of the types of bulk hazardous materials being transported into, out of and through Massachusetts, and will include roadway, rail, air, and water transportation. In 2013, MassDOT completed a study entitled "Report on the Safety Impacts of Ethanol Transportation by Rail through Boston, Cambridge, Chelsea, Everett, Somerville, & Revere."

The Massachusetts State Rail Plan *is now available in draft form. This Freight Plan provides recommendations to improve freight rail, which is already an established freight mode in New England. This plan encourages short-sea shipping since it is not currently a well-established freight mode in the region. Pipelines are discussed on page 3-25 insofar as they relate to fuel.*

The map of airports in this document has been revised to include some out-of-state facilities.

The freight data analyzed for this Plan includes through flows, in addition to originating and terminating flows, as well as commodities used by the Commonwealth.

Federal freight performance measures have not yet been adopted. Future freight plans will include discussion of these measures.

B.14 Erika Oliver Jerram, Framingham Town Planning Staff

Below are the combined Town of Framingham Planning Staff Comments on the MassDOT November 2017 Draft Freight Plan

In general, report is well organized and the graphics are strong and support the report well.

Specific comments include:

Overall, the plan should elevate municipalities to a collaborative role in freight system improvement. While communities host the range of freight system facilities, their role in the process and plan is limited. Clear communication channels and new technologies can help municipalities manage municipal impacts, zoning/land use planning, and preparing for climate change. A state commitment to reduce/eliminate municipal impacts, where practical, would also help foster a collaborative relationship.

Page 2-10 *[now page 2-11]* - Framingham listed as key CSX Freight yard. This facility supports regional freight operations, but rail operations also impair regional highway performance, including Routes 126 and 135. The plan should encourage CSX and other providers to make maximum use of technology, to ensure freight operations impose minimum disruption of municipal (in Framingham, Central Business District) activity. Technology could also drive efficiencies allowing CSX or other operators to divest from freight yards that impose local burdens – or impair local development. For example, in Framingham,

technology could help CSX divest from one or more freight yards. This could enable providing new connections linking the downtown population to open space assets, such as Farm Pond and Farm Pond Park.

Page 2-13 *[now page 2-15]* - 495/90 interchange identified as key highway bottleneck. Framingham supports addressing this bottleneck, which will help clear interstate traffic and reduce pressure on state and local roads connecting Framingham. Related investments should not come at the expense of Framingham infrastructure priorities (such as the grade separation)

Page 4-42 *[now page 4-43]* – Immediate strategy, infrastructure improvement – prioritizing freight-supporting bridge repair. Framingham supports investments that will repair and improve bridge functionality, for freight and other uses.

Page 4-56 *[now page 4-59]* – Policies and People – In order achieve common goals to reduce emissions and congestion on highways, Framingham is working towards mode shifts that allow people to move about the community and connect to jobs, homes and destinations in other communities via transit and non-vehicular circulation. We encourage MassDOT to encourage freight rail corridors as potential resources for shared access such as rails with trails or dedicated transit lines using DMU or similar systems in order to get individual cars off roads and maximize the safe, shared use of key corridors.

MassDOT Response

Thank you for your comment. The Freight Plan identifies the potential of innovation to improve the efficiency of freight operations. We are not certain of the specific technologies you are referring to, and suggest that you contact the railroad directly with those suggestions.

MassDOT and the MBTA have just commenced work on the MBTA Commuter Rail Vision. This 18 month process will consider a range of alternative strategies for providing rail service using the Commonwealth's extensive network of rail infrastructure in Eastern Massachusetts. The Rail Vision will contemplate service models that could be implemented using different types of technology and rolling stock, including multiple units, among other strategies.

B.15 Peter Lowitt, Devens Enterprise Commission

First comment

Concerned with air pollution from diesel freight in environmental justice communities such as Ayer, MA. Are there on-going efforts to retrofit diesel engines with cleaner more efficient engines and technologies? These efforts would fall under Healthy and Sustainable transportation and supporting healthy and sustainable communities. They would also be included as part of developing a strategy to reduce CO2 emissions from all freight vehicles. Can you tell me if there are efforts to address these issues in the freight plan? Thank you.

Second comment

When I investigated a few years ago, Pan Am was in the process of upgrading its diesel locomotives to newer cleaner fuel burning ones. Where are they in this process?

If they have not completely upgraded their fleet, can Massachusetts provide incentives or requirements to complete the process? All along the rail corridor in Massachusetts and throughout New England we have environmental justice neighborhoods in close proximity to the rail lines. Many of these communities suffer from higher incidences of asthma and other respiratory illnesses which the dirtier older diesel engines aggravate. Cleaning up the diesel operations will have a public health benefit for all of New England and I hope the Massachusetts Freight Plan addresses this issue.

Third comment

Where is Pan Am railroad in their efforts to upgrade their locomotives to clean diesel? We should put some money in the Freight Plan to incentivize them to complete the task to reduce air quality issues for communities all up and down their line.

MassDOT Response

Thank you for your comment. MassDOT continues to discuss the feasibility of auxiliary power units (APUs) with the relevant railroads, however there are technical barriers to implementation. Locomotives must be equipped with the necessary devices, but due to the fact that locomotives are used nationally, it is difficult to equip them for use in just one state. For information regarding Pan Am, we would suggest you contact the railroad for the most current information.

B.16 Mark Marasco, Maple Leaf Distribution Services (FAC Member)

Well done! You've done an excellent job listening to stakeholders and expressing the information in a clear and organized plan which contemplates several different scenarios for the future.

A few comments:

Figure 2.7 of the Massachusetts Freight Rail Network (pdf page 25 of 91 / Plan page 2-16 *[page 2-18]*) shows a yellow "Rail Yard" in Palmer MA. I suggest adding a blue "Transload" square as well. The Palmer Industrial Park has 4 significant transload operations which are currently active:

- American Dry Ice - liquid carbon dioxide.
- Greater Boston Transload (GBT) - lumber and other building materials.
- Maple Leaf Distribution Services - forest products, metals, consumer goods.
- Sherwood Lumber - lumber and other building materials. Eagle Logistics in neighboring Monson handles forest products and consumer goods.

In the interactive online presentation near Figure 2.7 there is a section titled "The rail system" which describes the benefits of rail. The last bullet point states "Freight logistics Rail has more reliable travel times than trucking". Is there data to support this statement because I am skeptical that it can be supported? You could add a bullet point stating that rail is a more fuel-efficient way to move freight than truck. I did not find a similar list of benefits in the pdf version of the plan.

Appreciate your vision for ensuring safe and reliable transportation systems well into the future.

Mark Marasco - President

Maple Leaf Distribution Services, Inc.

MassDOT Response

Thank you for your comments. We have revised the document in response to your observations.

B.17 Mason, Worcester

Thanks so much to the whole team who worked on this! I am a student working on my master's degree capstone project, and this report provided some amazing information about the future of freight and infrastructure in the Commonwealth!

MassDOT Response

Thank you for your comment.

B.18 Lloyd Mendes, Somerset

As a South Coast resident, need for more analysis of the freight needs of peripheral regions that do not serve Boston (i.e. outside the Boston-Worcester axis).

AIR: On page 5-79, in Table 5.1 *[now Figure 5.3, page 5-80]*, the draft proposes to "Improve the efficiency of air cargo processing at Logan Airport and in the surrounding area." Will MassDOT ignore the air-freight needs of peripheral areas that are more cost-effectively served by airports in surrounding states? Your draft could encourage South Coast industry to forge freight links with the closer and less congested international airport in Providence RI and encourage western Massachusetts to link with Albany International Airport by redefining your airfreight strategy as: "Improve the efficiency of air cargo processing at Logan Airport and in the surrounding area OR, WHERE MORE COST-EFFECTIVE, IMPROVE LINKS TO AIR-CARGO SERVICE IN NEIGHBORING STATES." Then, edit the map in Figure 4.2 (Major Airports and Seaports in Massachusetts, on page 4-52 *[now page 4-54]*) retitling it, "Figure 4.2 Major Airports and Seaports SERVING Massachusetts" and show freight airports in neighboring states that are easily accessed by highway or freight rail from the Commonwealth. It's easy for you to map out-of-state airports because you simply copied the current map in the draft from the National Plan of Integrated Airport Systems (cf. page 4-51).

AIR & SEA PORTS: Your map of air and sea ports (Fig. 4.2) would be even more informative if you varied the size of the

circles proportional to the capacity of each facility with the inner solid circle showing current capacity and an unfilled, concentric, outer circle showing the potential build-out area of each facility. Also, mapping all "major airports" is not as useful in a freight plan as is mapping airports with freight capabilities.

It would be helpful for investors in international seafood distribution, for example, to see at a glance whether New Bedford Regional Airport provides cargo service, and to see its runway length (with potential build-out capacity) and its current connections to other airports. Indeed, because this map is used to illustrate section 4.3 Hedging and Shaping Strategies (which discusses in minute detail the infrastructure improvements needed at the sub regional level) it would be useful to show the locations and capacities of tertiary freight harbors that serve the sub regional level (e.g. the small freight harbors of Falmouth, Chatham and Vineyard Haven). Investors are unlikely to develop the small, secondary port of Mount Hope Bay as an intercontinental or interstate coastal terminus but might consider linking this small but well connected port to smaller tertiary harbors (e.g. shipping fuel by barge). Simply documenting secondary and tertiary airport and harbor infrastructure in the Freight Plan will tend to facilitate private investment, other factors held equal.

RAIL: "The Massachusetts Freight Rail Network," (Figure 2.7, p. 2-16) *[now page 2-18]* is biased against the freight rail needs of communities far from Boston. The seaports that most efficiently serve western Massachusetts may not be in Boston but in Connecticut, Rhode Island or the South Coast of Massachusetts. However, the capacity of rail lines from western Massachusetts rail yards and intermodal terminals is not indicated on this map wherever the lines cross into neighboring states. (See for example, the small P&W rail segment that crosses the northeast corner of Rhode Island, linking Worcester to Fall River and New Bedford ports via Woonsocket, but see also the very significant 286k capacity rail line that runs south of Pittsfield only to disappear at the Connecticut border.) In order to efficiently allocate economic development capital, planners should know if infrastructure in a neighboring state more efficiently serves a peripheral city than does the Port of Boston. MassDOT should indicate the capacity of rail lines in neighboring states that could play a significant economic role for Massachusetts industries at a lower investment cost for taxpayers. You already discuss interstate cooperation in reference to future development on pp. 4-46 to 4- 47 *[now page 4-48]* (in section 4.1 Immediate Strategies, under paragraph "Coordinate with freight planning in neighboring states"). I ask that you also recognize existing interstate services in this freight plan. To your credit, you do this in reference to highway transportation on page 2-18 (Figure 2.8) *[now figure 2.9, page 2-20]* showing truck parking in neighboring states, because it would be irresponsible for State planners to recommend duplication of a service in Massachusetts that is provided just across the border in another state.

RAIL: On page 2-11 *[now page 2-12]*, in the first paragraph beginning with, "Other freight rail carriers operating in Massachusetts include ..." you do not mention Massachusetts

Coastal Rail, yet this is the freight rail serving the ports of Fall River and New Bedford as well as Cape Cod.

RAIL: It would be helpful to list the rail terminals operated by secondary rail operators (Mass Coastal, P&W, etc.) as well as by CSX on Figure 2.2 "CSX Facilities in Massachusetts" on page 2-10 *[now page 2-11]*, renaming it to "FREIGHT RAIL Facilities in Massachusetts"). For example, P&W operates a significant intermodal rail terminal south of Worcester on the rail line that links the ports of Fall River and New Bedford to Worcester via Woonsocket. Clearly seeing this relationship mapped out would tend to attract private investment, other constraints being equal. Showing only the facilities operated by CSX biases the Freight Plan toward the needs of Boston and ignores the needs of peripheral regions not served directly by CSX. Alternatively, you could simply update the very informative Table A-1: Existing Freight Railroad Yards and Facilities in Massachusetts, published in Massachusetts State Rail Plan (2010) but if you do, please correct the very poor graphic quality of the maps in this earlier report (please see my comments below, under MAP RESOLUTION).

RAIL: On your rail map (Figure 2.7, The Massachusetts Freight Rail Network, page 2-16 *[now page 2-18]*) it would be helpful to color code the rail lines operated by secondary railroads (CSX vs. Mass Coastal vs. P&W, etc.). Alternatively, you could simply paste the map of Existing Rail System FREIGHT NETWORK: OWNERSHIP from page 14 of your own recent online PowerPoint presentation, State Rail Plan Update Public Meetings (posted in 2016 at https://www.mass.gov/lists/rail-plan-documents). This map shows the ownership of every rail line in New England. However, you should add to this map the tiny rail spurs which presumably show existing or historic industrial loading yards. For example, private investors should see that Miles Standish Industrial Park is inked to the ports of Fall River and New Bedford by a short rail spur not shown on your map in Figure 2.7. You could also make this same pdf map (Fig. 2.7) far more informative by mapping rail weight capacity (by varying line thickness) and double-stack capacity (using solid vs. dashed vs. dotted lines). You discuss these capacities verbally on page 2-15 *[now page 2-17]* but do not map them in your current draft.

RAIL: There is some confusion on your maps between the ownership vs. the operation of rail yards and lines (this is particularly an issue where the State owns the rail line but a private rail carrier owns intermodal facilities on the line). Please keep in mind that local communities and investors interested in expanding intermodal freight terminals need to know simply who (whether owner or operator) they might approach to initiate investment and expansion.

RAIL: On your rail map (Figure 2.7 "The Massachusetts Freight Rail Network," page 2-16 *[now page 2-18]*) it would be helpful to provide some quantitative measure of the capacity for expansion of the many small rail yards scattered throughout the State, perhaps by increasing the area of the yellow squares in proportion to current loading capacity, and overlaying a concentric unfilled square to represent the potential build-out surface area of each freight yard. For example, it would be

useful to manufacturers and potential investors to see at a glance that the Mass Coastal Rail freight yard at Fall River State Pier is tightly confined by old mill buildings and modern tourism land uses and has little build-out potential. Alternatively, you could use the map, "Existing Rail System FREIGHT NETWORK: MAJOR FACILITIES" on page 16 of your own recent online PowerPoint presentation, State Rail Plan Update Public Meetings (posted in 2016 at https://www.mass.gov/lists/rail-plan-documents). This map is more informative than your draft map in Figure 2.7, distinguishing major from minor rail yards and showing ownership. You could still add in the very minor rail yards with an indication of their build-out capacity if you used the State Rail Plan Update map. You could delete Figure 2.7 in that case.

FREIGHT ADVISORY COMMITTEE MEMBERSHIP: I am surprised that Genesee & Wyoming Rail is represented on your Freight Advisory Committee but CSX is not. CSX was a member of the Freight and Rail Plan Working Group for the 2010 State Rail Plan and would be a better representative of the many smaller railroads operating in the Commonwealth, because CSX cooperates with secondary rail lines to collect freight for its main trunk line. I am encouraged to see Connecticut DOT listed as a member of your Freight Advisory Committee, but would be even more encouraged to see New York DOT invited, because of the major freight role played in Western Massachusetts by Albany International Airport and Selkirk Intermodal Terminal. Including representatives of important out-of-state service providers could inoculate you against the danger of duplicating already-available services.

RAIL SUMMARY: Documenting in more detail the rail service provided to peripheral regions of the Commonwealth would help correct a centralizing bias in this freight plan, which tends to ignore possible investments outside Boston and the Boston-Worcester axis serving Boston.

SEAPORTS: Wherever "Massport" is listed on Table 5.1 *[now Figure 5.3, page 5-80]* ("Implementation of Strategies," from page 5-79) under the column headings, "Funding," and "Management," you should list also MassDevelopment and Seaport Economic Council. Massport funds and manages only the major port of Boston and would ignore the needs of secondary ports and tertiary harbors that might help reduce traffic congestion on highways in peripheral parts of the Commonwealth. MassDevelopment has already taken over operation of the Fall River, New Bedford and Plymouth State Piers. You recognize MassDevelopment's prominent role on page 5-61; you should list it as a major funder and manager in Table 5.1 *[now Figure 5.3]* as well. You should also recognize MassDevelopment's role at secondary ports in the text of page 2-10 *[now page 2-13]*, paragraph 3, last sentence: "...while Massport operates Logan International Airport and the Port of Boston, and other seaports are managed by cities and towns, INSERT: MASSDEVELOPMENT OPERATES OR IS PLANNED TO OPERATE SEVERAL SECOND TIER PORTS, INCLUDING FALL RIVER, etc..... "

TERTIARY HARBORS: The Seaport Economic Council funds both economic planning and infrastructure at municipally managed, tertiary harbors in 78 coastal communities, but it is

not recognized in your draft at all. Tertiary freight harbors in small towns could help reduce highway congestion in popular coastal zones by diverting freight shipments from trucks (e.g. diverting trucked fuel oil and propane from Cape Cod highways, instead shipping it by barge from Mount Hope Bay to Vineyard Haven, Hyannis and Falmouth). Listing MassDevelopment and Seaport Economic Council as funders of secondary ports and tertiary harbors in Table 5.1 *[now Figure 5.3]* could encourage local planners and private investors to think of freight development outside our most congested port in Boston.

TERTIARY HARBORS: Your failure to recognize MassDevelopment and Seaport Economic Council may be due to your failure to include them in the planning process. Note, for example, that the 2010 State Rail Plan lists Seaport Advisory Council as a contributor to the Freight and Rail Plan Working Group, while you list neither agency as a member of your Freight Advisory Committee in 2017. I believe that you need a more inclusive Freight Advisory Committee that would represent maritime freight interests in peripheral coastal areas as well as in Boston.

HIGHWAY: On page 2-18 *[now page 2-20*, Figure 2.8 "Truck Parking and Servicing Facilities in Massachusetts and Neighboring States," the map key on the right of the figure does not define the green circles. Presumably green circles show overnight truck parking without commercial services, but this should be stated explicitly in the key.

HIGHWAY: I am surprised that the draft does not present a traffic volume-to-capacity map of the Commonwealth's highways. The draft's map of highway bottlenecks (Figure 2.5 "The Massachusetts Highway System," page 2-14 *[now page 2-16]*) is biased against regions outside Boston because it is weighted by absolute traffic flow rather than by percent congestion. Such an absolute measure will of course always focus on greater Boston and ignore other parts of the Commonwealth. SRPEDD, the MPO for southeastern Massachusetts, publishes a monochrome pdf map of major and secondary highways showing actual traffic volume by varying line thickness. I ask you to present such a map for the entire Commonwealth but to add a layer of information by representing the traffic volume-to-capacity ratio of each highway segment with a colored line (e.g. red showing highways utilized well above capacity and green showing utilization well below capacity, with shades of orange and yellow showing intermediate levels of use). Such a map would help peripheral communities attract regional distribution investors. Please do not respond that MPOs can produce these traffic volume-to-capacity maps without the help of MassDOT, because private investors considering investment along I-495, for example, will want to know traffic constraints outside as well as inside the SRPEDD region. We need an overall view of volume-to-capacity constraints state-wide.

FUEL: The Freight plan verbally describes (in one paragraph) the movement of fuel through pipelines, seaports, and trucks in Section 3.0 under Industry (p. 3-25) and analyzes fuel movement in a catastrophic climate-change scenario on page 4-48 *[now page 4-49]* (section 4.2 Robust Strategies). I ask for more analysis and mapping of existing fuel movement

infrastructure where it competes for scarce highway, rail and port capacity. Fuel is presumably the single largest bulk cargo that congests our local highways. The seasonal shortages of natural gas are driven, not by global or national market shortages, but by bottlenecks in transportation. Fuel is a major input to industry and particularly to the kind of labor intensive industries that might employ our undereducated, low-skilled workers in Gateway Cities. It behooves us to erase our conceptual boundaries and consider the fuel delivery network of pipelines, seaports, storage, and truck distribution as just another freight network competing for scarce highway and rail capacity. I ask you to flesh out your analysis, mapping the location and capacity of fuel intermodal gateways (i.e. where pipelines and seaports discharge to truck, rail and barge distribution systems) corridors (truck, rail and barge distribution networks) storage and local distribution radii against the demands of local markets. Because of the importance of local opposition to fuel transportation, your analysis of corridors should map restricted routes (see for example your discussion of Boston municipal policy on p. 3-27, section 3.1, sub-section "Policy and Regulation," the bullet beginning with "Fuel trucks...."). The level of detail I request is analogous to your treatment of seaport-rail-highway networks that carry other freight products. Only MassDOT has the mandate and expertise to analyze the distribution of cargo by sea, rail and highway, looking for conflicts with other uses of these corridors, and I ask MassDOT to step up to bat and perform this analysis for fuel. As in my recommendations related to out-of-state airports, seaports and rail lines, I ask that MassDOT include in its analysis important terminals and distribution centers that, while located out-of-state, serve Massachusetts markets (e.g. the major fuel oil terminal in Tiverton RI that serves local distribution companies throughout South Coast Massachusetts).

FUNDING: On p. 5-77, Table 5.1 *[now Figure 5.3]*, on the row labelled "Maintain uncongested freight access to airports, seaports, and rail terminals in mixed-use urban settings," it's not helpful to identify potential State-agency funders only as "Commonwealth." For example, you should list under the column heading of "funding", Commonwealth (IRAP) and Federal (FAA-AIP). These funding agencies are specifically identified in prose from p. 5-61, but it would encourage managers of secondary and tertiary freight harbors, railheads, and airports to see this information spelled out in Table 5.1 *[now Figure 5.3]*.

INDUSTRY: On page 3-25 *[now page 3-26]*, Figure 3.5 (Cluster Ranking for Massachusetts Metropolitan Areas) Bristol County is shown as a black hole, with no industry clusters identified. Surely New Bedford, the primary fishing port in the US, ranks nationally in its fishing industry. After all, Greenfield is recognized for its video production industry cluster on this map, and Greenfield ranks 227th nationally. Presumably, New Bedford ranks at least that high nationally for fishing. (Please note that your map on p. 3-25 clearly places New Bedford within the unrecognized black hole of Bristol County and outside the yellow zone named "Boston," which you rank third nationally in fishing.) I suggest that you check your data tables to see if New Bedford's fishing cluster was incorrectly credited to the Boston

region on this map. Denying New Bedford recognition for its clusters of industries in a major State planning report will tend to discourage investments, and Bristol County -- the stepchild of the Commonwealth -- cannot afford to discourage investments.

ORGANIZATION OF REPORT: The Draft Freight Plan places a "Freight Focus" balloon at the end of every chapter (see "Freight Focus on Urban Supply Chains," p. 1-8 *[now page 1-9]*; "Freight Focus on the Trucking Workforce," p. 2-22 *[now page 2-22]*; and "Freight Focus on the Seafood Supply Chain," p. 3-37). The Freight Focus balloons are not simply lite reading inserted to relieve the reader from an otherwise turgid quantitative analysis: the balloons encourage the reader to step beyond quantitative analysis and to speculate on the future. However, your placement of the balloons as punctuation at the end of each chapter is not helpful because the balloons appear out of logical context. It would be better to move these balloons to Chapter 4, under Recommended Strategies (e.g. moving "Freight Focus on the Trucking Workforce" to page 4-45 *[now page 4-46]* under "Develop a workforce strategy for freight professions," and moving "Freight Focus on Urban Supply Chains" to page 4-51 *[now page 4-52]* under "Develop delivery areas in urban districts and town centers"). The integration of Freight Focus on the Seafood Supply Chain into the body of your text is more problematic for me because I disagree with your Boston-centric planning. However, following your Boston and Conley Terminal investment bias, it would be logical to move "Freight Focus on the Seafood Supply Chain" to page 4-53 *[now page 4-55]* under "Improve the efficiency of air cargo processing at Logan Airport and in the surrounding area." However, as a South Coast resident, I'd rather see the Seafood Supply Chain balloon moved to page 4-51 *[now page 4-52]* under "Encourage increased use of underutilized gateway infrastructure (ports and airports)." This would encourage planners and funding agencies to consider expanding the freight capacity of New Bedford Regional Airport instead of trucking high-value seafood to Logan Airport on congested highways. Another problem with the Freight Focus balloons cited above is that they are inserted as images and not as text and so cannot be searched digitally on your pdf publication. Because they are unsearchable, not placed in logical order within the body of your text, and not referenced in either the Table of Contents or List of Figures, these Freight Focus arguments are neither accessible nor integrated into your argument.

MAP RESOLUTION: All your maps showing nodes (unlike those showing only lines) have the same problem, but I will use Figure 2.5 (The Massachusetts Highway System) to illustrate the problem. Because the pdf map is simply an image and not a GIS with point and node layers, when it is zoomed in order to show a particular intersection in more detail, the red circles that represent bottlenecks obscure the view of the intersection. Please consider inserting a zoomed, detailed map of those areas (e.g. Boston & Worcester) where red circles overlap and obscure the mapped intersections. Note that I have no complaint about resolution when you map only lines (e.g. highways and rail lines) because these lines can be

unmistakably identified on a GPS application or map for further research.

FINAL SUMMARY: I am not challenging the State's development funding priorities, which clearly favor Boston (especially Conley Terminal) and that part of Worcester that serves Boston. I am asking only for a more even-handed analysis of the economic advantages and constraints of peripheral areas, helping us to attract private investment. Because the future is either unknown or stubbornly denied when it is dimly guessed, many private investors pursuing independent visions may lead us to a more prosperous future than will central planners.

MassDOT Response

Thank you for your comments and suggestions. The capacity of freight facilities is dependent on many factors. It would not be feasible to calculate it for this document in a way that would satisfy all parties.

We will renew our efforts to have larger railroads represented on the Freight Advisory Committee.

Figure 3.5 is based on data from the US Cluster Mapping Project, which assigns Bristol County to the Providence area. As the Providence area also includes the whole of Rhode Island, we had not felt that it was appropriate to include it on the map. In response to your feedback, we have included it in the Final Draft, but please note that the employment reflected in the rankings is not all in Bristol County.

MassDevelopment's role was not finalized when we published the Draft Freight Plan, but it has been finalized since. Mass Development now manages the Fall River and New Bedford State Piers, but the Department of Conservation and Recreation maintains management of Plymouth State Pier.

The Freight Plan is focused on a statewide level; more granular planning may occur through MPO-level freight planning activities.

MassDOT is in the process of adopting performance metrics that will analyze the reliability of truck travel times.

The Freight Plan had to look at all commodities, and therefore cannot analyze any single commodity in great detail.

Page 5-67 identifies all types of funding sources, whereas Figure 5-3 (implementation strategies) cannot list each funding category under each funding source because there can be many different options.

The "Freight Focus" callouts are tied to the chapters, not the strategies. The "Freight Focus" callouts were designed primarily for the online interactive version where they appear next to the appropriate section of each chapter.

Please see the online interactive version of the Freight Plan for higher resolution viewing. The online interactive version is meant to be the primary medium for the document, with the PDF to supplement. Some legends have been adjusted to improve readability.

B.19 Paul Mission, Southeastern Regional Planning & Economic Development District

Dear Mr. Sherman:

The Southeastern Regional Planning and Economic Development District (SRPEDD) has reviewed the Draft Massachusetts Freight Plan and offers the following comments.

Overall and in general, SRPEDD staff concurs with the results and plans outlined in the DRAFT Freight Plan. Following comments for consideration with this plan and with future specific improvement projects to enhance to the movement of goods for southeastern Massachusetts.

SRPEDD agrees that maintenance of the highway system and the bridges associated with that system is vital in the continued movement of freight throughout southeastern Massachusetts. This is key due to the limited number of available rail lines within our region, the highway network becomes a key component for distribution of goods. However, the Priority Boost of Chapter 90 Funding and the Municipal Bridge Program is necessary in order for the municipalities to maintain their road networks that are significantly impacted by freight movement. Heavy trucks traverse locally maintained roads daily between their distribution centers and the major highways. Examples include, but are not limited to:

- The Middleborough Rotary with Routes 18 and 28 accessing the Industrial Parks and Sysco Distribution Center in Plympton,
- Route 79, Freetown with a Stop and Shop Distribution Center.
- Route 79, Lakeville with an Industrial Park.
- Airport Road/North Main Street/Wilson Road, Fall River with an Industrial Park and Amazon Distribution Center.
- Bay Road, Taunton with an Industrial Park.
- Tobey Road, Wareham with an industrial park.

Communities need assistance in the regulation and enforcement of restricting trucks on certain local streets. Many communities complain about trucks using streets that serve residential neighborhoods at lower speeds and are not designed to withstand the weight of a large truck. However, local officials have attempted truck restrictions, but have no real means of enforcement.

Short term and Long term goals need to expand to consider improvements to highway interchanges to reduce congestion and improve safety by lessening rollover crashes. A prime example of these interchange improvements was with I-95 SB to I-295 SB in Attleboro which will have a long term benefit to the movement of freight. Short term improvements should include the identification and signalization of "half Cloverleaf" interchanges near industries with freight movement to improve

access and improve safety followed with a long term solution of a possible full cloverleaf interchange.

Consideration should be made to truck climbing lanes in areas of hilly terrain to maintain traffic flow and improve safety. This need is warranted where divided highways intersect such as with Route 140 NB north of Route 24 in Taunton, I-495 SB south of the Mass Pike (I-90) or I-95 NB north of I-495 or Route 140 in Mansfield. The uphill grade is enough to prevent truck with a heavy load from quickly reaching the free flow speed of the adjacent traffic.

The report discusses MassPort and their role for improving ports and airports within the Boston Area. SRPEDD supports a need to broaden those horizons to include improvements/ expansions to other air and sea ports outside of the Jurisdiction of MassPort such as the New Bedford and Fall River Seaports as well as the New Bedford Regional Airport. An equitable distribution of improvement funding throughout the commonwealth is necessary. These distributions and resulting improvements/expansions will ultimately assist in the reduction transportation related problems in the greater Boston area.

The 2009 SRPEDD Truck Study recommended the need for a truck staging area for the New Bedford and Fall River Seaports. In addition, there is a need to improve, construct or in certain cases, re-open rest areas for the trucking industry. Expansion of these areas can include areas for truck layover that include electrification to reduce idling. Examples include I-95 NB in Mansfield and I-95 EB in Swansea. Private / Public Partnerships should be explored to help fund or maintain these rest areas and the elimination of Federal Legislation on Non Toll Road Interstate Highways that prevents these rest areas from leasing space to commercial activity. These staging areas, would be key for trucks waiting to access the seaports or for accessing industrial parks in Mansfield and further north on I-95. Furthermore, with electric trucks a possibility in the future, these layover facilities will necessitate the need for charging stations.

MassDOT, in their efforts of exploring variable tolling, should explore the idea that would apply higher tolls for the trucking industry to regulate the time of day in which trucking occurs. Considering the excessive congestion during the morning and afternoon peak hours is amplified with the presence of truck traffic. Higher tolls during these peak hours would help shift some of the truck traffic during these hours to off peaks which in turn contributes to minimizing traffic congestion during these hours. This is currently being explored within the state of Rhode Island.

Please include and consider these comments as you work towards finalization of this plan. SRPEDD staff is available if you have any additional concerns and comments regarding this matter.

Respectfully,

Paul L. Mission
Transportation Planning Manager
SRPEDD - 88 Broadway, Taunton, MA 02780
P: (508) 824-1367 Ext. 230 F: 508-823-1803
Dial 711 for MassRelay

MassDOT Response

Thank you for your comment.

Section 10A-9 of the 2009 MassDOT Amendments to the Manual on Uniform Traffic Control Devices (MUTCD) describes the warrant and procedure for communities to request a truck exclusion.

The annual crash file contains information on truck rollover accidents, which could be compiled into a list of high rollover locations. While not all safety improvements impact congestion, either positively or negatively, safety considerations are taken into account during the planning and design phases as projects move through development. MassDOT has also been using more, and larger, warning signs, for ramps with higher potential for rollovers.

Projects on specific facilities are considered individually by MassDOT.

While not specific to the ports mentioned in your comment, the strategies related to ports are designed to encompass them.

MassDOT is conducting a truck parking implementation study, which will include results from the 2009 SRPEDD Truck Study.

This plan does not make any recommendations regarding changing tolling policy.

B.20 Gary Roux, Pioneer Valley Planning Commission (FAC Member)

Thank you for the opportunity to offer comments on the draft version of the Massachusetts Freight Plan.

Figure 2.5 on page 2-14 *[now 2-16]* identifies the Freight Bottlenecks for Massachusetts. This figure is difficult to read at a statewide scale. Additional information should be provided on the exact location of these bottlenecks and any potential improvement projects that may mitigate the existing bottlenecks in the future. It is also requested that additional information be provided to define the Critical Urban and Rural Freight Corridors on page 2-13 *[now page 2-15]*.

Similarly, Figure 2.8 Truck Parking and Servicing Facilities should provide additional information on the location and services provided at existing truck parking facilities. Additional information is also needed to describe the significance of the "blue" and "green" designation on the legend.

The proposed "Hedging" strategy to "Identify and preserve existing rural and industrial sites for warehousing and distribution development" on page 4-50 *[page 4-51]* is very important to both identify the location of potential new development with a high concentration of freight use and assisting local communities to prepare for such development. Both MassDOT and the MPOs should be added as proponents for this strategy in the Table on page 5-79 *[now page 5-80]*. It is also recommended that develop a guide for municipalities on

how to begin this process, identify resources available to them, and how to recognize and address the potential negative impacts of such development.

It is recommended that neighboring out of state airports be added to Figure 4.2 on page 4-52 *[now page 4-54]*. As stated in the text, operations exist at a number of out of state airports. Bradley International Airport in Windsor Locks, CT is much more accessible for many residents and businesses in western Massachusetts. Inclusion of these out of state airports will provide a better understanding of the opportunities that exist at these airports due to their close proximity to many Massachusetts cities and towns.

We strongly support the "Policies and People" Strategy to "Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution and loading into their planning and zoning and land use decision making process. It will be important for Massachusetts to take the lead in this regard in order to encourage uniformity and streamline the integration of freight planning into the regional and local planning process.

While it is understood that this plan is not intended to develop the identified strategies into projects with locations and budgets, it does not appear to address the important role of the development of long range Regional Transportation Plans (RTP) by the Massachusetts Metropolitan Planning Organizations (MPOs) have on the development of future transportation projects. Figure 5.1 on page 5-60 *[now page 5-62]* only mentions the MPOs as an option to receive public input on regional priorities. While this is an important part of the planning process, it does not begin to address the role of the MPOs in the development of the RTP and how projects included in the RTP are meant to feed into the regional TIPs. The strategies included as part of this plan should specifically be recommended for inclusion into the next round of RTPs in FY2020 and tied to specific transportation improvement projects.

Further, the Massachusetts Freight Plan should address the work done at the MPO level by identifying the existing freight improvement projects that appear in the current RTPs. As an example, the RTP for the Pioneer Valley MPO identifies a major bottleneck for freight operations at the existing railroad underpass on Union Street in West Springfield, MA. This is an important access road to the CSX Intermodal Terminal and Freight Yard in West Springfield, MA. This improvement has been identified in the RTP and is just one example of an existing identified but unmet need to improve freight access in Massachusetts.

MassDOT Response

Thank you for the comment. We have listed the bottlenecks and provided additional information about the Critical Urban and Rural Freight Corridors.

We have adjusted the legend on Figure 2.8 for added clarity.

We have added MassDOT and MPOs as proponents. While we agree a municipal guide would be very helpful, it is outside the

scope of the State Freight Plan. There are useful National Cooperative Freight Research Program and National Cooperative Highway Research Program resources currently available addressing this topic.

The online interactive map includes out-of-state airports and has been added to the printed Freight Plan. In order to maintain legibility of the pdf version, we had to limit the field of view.

We have added language to highlight the importance of the long range Regional Transportation Plans and Transportation Improvement Programs.

B.21 Rich Rydant, Central Massachusetts Regional Planning Commission

Hello-

The transportation staff of the Central Massachusetts Regional Planning Commission (CMRPC) has reviewed the "Draft Massachusetts Freight Plan" document dated November 2017.

Based on the staff review, the CMRPC has no major commentary to offer on the Draft Plan. The Plan document appears targeted, seriously considers trucking rest stop needs and also indicates the use of future year funding in a reasonably phased manner. The draft document appears to be both concise and balanced.

Should you have any questions or require any additional information, please do not hesitate to contact me at your convenience.

Sincerely,

Rich Rydant

Transportation Project Manager

CMRPC.

MassDOT Response

Thank you for your comment.

B.22 Laurie Scarbrough, Franklin Regional Council of Governments

The Franklin Regional Council of Governments supports the proposed Operational Innovation to encourage side guards on trucks to protect cyclists. The FRCOG supports the use of any technology to protect cyclists and pedestrians when interacting with heavy trucks.

MassDOT Response

Thank you for the comment.

B.23 Abby Swaine, Environmental Protection Agency

First comment

Formatting issue: on the PDF, 4-39 through 4-41 lack the large graphics that the interactive version has. For example, 4-39 lacks the Build Truck Stops and Parking detailed graphic that's so

prominent in the interactive version. So all the good detail about minimizing idling through electrification, and roles, is missing--and doesn't seem to be represented elsewhere in plain text.

Second comment

All the infographics are near the end of the PDF. The infographic for truck stops is called "Implementing an Immediate Strategy: Build Truck Stops and Parking," and includes electrifying them to reduce idling. That much is consistent with the text in the Immediate Strategies section. But there is more detailed text on TSE under Electrify Truck Stops in the Hedging and Shaping Strategies section, rather than in the Immediate Strategies section. It's a little confusing to have TSE represented in both places, as something to do NOW, and also as something to gingerly experiment with. I feel like I'm overlooking a nuance.

Third comment

Gabe, I think I have to keep my comments rather bland (see attached), because I'm not sure it's really EPA's place to comment on a state DOT's freight plan, but… I want you to know I care… and really appreciate all your efforts to make it balanced, pro-environment, and pro-efficiency. I think MassDEP is going to submit some constructive comments regarding rail, and I hope some others to whom I advertised this opportunity send you feedback too. Good luck synthesizing it all, and I hope we have a chance to collaborate before long. --Abby

Abby Swaine

SmartWay & Clean Freight
US Environmental Protection Agency, New England
5 Post Office Square, Suite 100, OES04-1
Boston, MA 02109-3912

The following are informal comments on the Draft Massachusetts Freight Plan 2017 by Abby Swaine, Clean Freight and SmartWay lead for EPA Region 1 New England, submitted to Gabriel Sherman at MassDOT on 12-5-17.

These comments cite the PDF version of the draft plan. I appreciated being invited to the Dec 29 2016 Policy and Regulation Workshop, and found it worthwhile. The following sections of the Draft are noted as consistent with EPA objectives and programs:

The following sections of the Draft are noted as consistent with EPA objectives and programs:

- **Vision and Guiding Principles:** Those who maintain and operate the Massachusetts Freight System will… Support healthy and sustainable communities.
- **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 of a 25% statewide reduction in GHG emissions from utilities, industry, transportation, and other sources by 2020 (Global Warming Solutions Act of 2008).

- **4.1 Immediate Strategies:** Support policies to reduce CO2 emissions from all freight vehicles (Cites state goals and federal engine standards.)
- **4.2 Robust Strategies:** Protect freight facilities from climate change impacts. Pursuing this strategy may involve: …Completing climate resiliency plans for MassDOT, Massport and for other major public asset owners.
- **4.3 Hedging and Shaping Strategies:** Infrastructure Improvements - Electrify truck stops. Idling at truck stops can be a source of both emissions and noise pollution in surrounding neighborhoods. Plugging in trucks when they would otherwise be idling can prevent these impacts. Government may need to become involved both due to the upfront cost of electrification, and also because the trucking industry may not reimburse drivers for electricity used while idling as they do for diesel fuel. Pursuing this strategy may involve: Researching electricity rates at different times of day to develop a cost profile for plugged-in idling (at night, the unit cost may become zero or negative), Reaching out to current and prospective truck stop operators to identify a small pilot study of electrification, Collaborating with pilot study operators to develop a business plan for electrification that is not burdensome to operators or to their customers, Implementing public-private partnerships to install electrification equipment and track its usage, Advertising the presence of electrification equipment and providing initial incentives for its use, Interfacing with trucking companies to encourage reimbursement of electricity costs.
- **Encourage side guards on trucks to protect cyclists.** Side guards that skirt the entire side of the truck to ground level can also provide aerodynamic benefits to fuel economy: 4 to 7% according to the EPA, equating to a $5,000 annual fuel cost savings for a long haul truck trailer. Pursuing this strategy may involve: …Developing a feasibility analysis of encouraging truck side guards on newly-purchased large trucks and trailers registered in Massachusetts.
- **Policies and People:** Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution and loading into their planning and zoning and land use decision-making processes. The National Cooperative Highway and Freight Research Programs (NCHRP and NCFRP) have studied issues that arise in synthesizing freight and smart growth. The research notes that increasing freight traffic, decreasing popular familiarity with the supply chain, growth in US population (and urbanization), and downward cost pressure have contributed to a need for good neighbor policies between freight uses and host communities. The report further notes the following as key community goals/concerns regarding freight: …Environmental and quality-of-life concerns – This includes emissions, noise, and vibrations.

- **5.3 How is Freight Prioritized?:** Projects proposed for the modernization and expansion priorities are evaluated by the Divisions using the Project Selection Advisory Council (PSAC) criteria. The PSAC recommended different weights when scoring different types of projects. Freight needs may be prioritized by creating a new criterion or by incorporating the benefits to freight into existing criteria. In the latter case, all of the criteria may be applicable to freight projects: …Environmental and Health Effects – Projects that reduce greenhouse gas and other pollutant emissions might be scored higher under this criterion.
- **6.0 The Road Ahead:** The Massachusetts Freight System will: …Support healthy and sustainable communities.

An infographic called "Implementing an Immediate Strategy: Build Truck Stops and Parking," including electrifying spaces to reduce idling, and is located at the back of the document, whereas the more detailed text on truck stop electrification can be found in this section. The reader concludes that MassDOT regards electrification of truck parking spaces both as a strategy for immediate use in building critical new parking capacity, and as a technology to test for more widespread use in future new builds and facility retrofits. In the online interactive version, this text appears: *"It is a critical immediate priority that new truck stops and parking areas be constructed, in particular along the northern arc of I-495. In addition to increasing parking capacity, there are other measures that states can take to improve the efficiency of their existing parking stock: Electrify truck parking areas so that vehicles need not idle. This will reduce emissions and noise pollution, Improve driver information systems, providing parking availability in advance and allowing for reservations."*

Policies and People: Provide collaborative guidance and support to MPOs and local governments in integrating freight, distribution and loading into their planning and zoning and land use decision-making processes. The National Cooperative Highway and Freight Research Programs (NCHRP and NCFRP) have studied issues that arise in synthesizing freight and smart growth. The research notes that increasing freight traffic, decreasing popular familiarity with the supply chain, growth in US population (and urbanization), and downward cost pressure have contributed to a need for good neighbor policies between freight uses and host communities. The report further notes the following as key community goals/concerns regarding freight: …Environmental and quality-of-life concerns – This includes emissions, noise, and vibrations.

MassDOT Response

Thank you for your comments. MassDOT is conducting a truck parking improvement implementation study, which will make recommendations regarding potential locations for truck stop electrification.

We have added language regarding the fuel economy benefits of side guards.

B.24 Lisa Weiland, Port Director, Massachusetts Port Authority

The Massachusetts Port Authority (Massport) is pleased to have the opportunity to review and provide comments on the Draft Massachusetts Freight Plan which was prepared for the Massachusetts Department of Transportation by *Cambridge Systematics, Inc.* with *Regina Villa Associates* and *Portscape, Inc.* As a member of the Freight Advisory Committee that helped to shape this plan and a stakeholder in freight movement in Massachusetts, Massport is pleased to see an updated framework to guide the State and freight planning stakeholders for the coming years.

This plan provides a critical framework for freight policy making and infrastructure improvements. Massport applauds the inclusion of critical infrastructure upgrades at Conley Terminal to keep freight moving and the inclusion of the Cyper and E Street truck route improvements, as this planned freight infrastructure project will improve last-mile connections from Conley Container Terminal and maritime industrial uses in the South Boston Waterfront to the interstate highway system. Massport also applauds the plan's discussion of the air cargo industry, including opportunities to increase efficiency at Boston Logan International Airport and potential to increase air freight at Worcester Regional Airport.

The preparation of this plan included the development of several Technical Memoranda which provide context on the freight economy. These Technical Memoranda are referred to in the plan and Massport would encourage inclusion of data from these reports or appending the Memoranda to provide more detail on the economic context behind the plan recommendations. Additionally, the preparation of this Freight Plan coincided with recommendations for 75 miles of new Critical Urban Freight Corridors and 150 miles of new Critical Rural Freight Corridors in Massachusetts to add to the National Highway Freight Network. To provide additional context on how freight is moving in and out of the state, it would be helpful to include a map of these key routes. In addition to the Cypher and E Street truck route improvements, the protection of existing truck routes to connect industrial land uses to regional transportation network is critical to the future of industrial uses in the Boston region. This plan makes clear that freight access to industrial generators and freight deliveries and loading are both challenges that should be addressed.

Thank you again for your consideration of our comments. We look forward to continued collaboration to implement the critical projects and policy objectives noted in this plan. Please feel free to contact me at (617) 428-2815 or at lweiland@massport.com if you wish to discuss our comments.

MassDOT Response

Thank you for your comment. Links to the technical memoranda have been added and facilities on the National Highway Freight Network and Critical Urban and Critical Rural Freight Corridors have been marked in Figures 2.5 and 2.8.

B.25 SC Wills, Texas

The request for Federal GRANT money feedback must include ALL tax payers, not only Massachusetts residents.

The New England Central is owned by Genesee & Wyoming. This operator is an international rail owner/operator, with BILLIONS in assets and cash. I see no need to beg for Federal assistance for FREE MONEY to help this corporation retain even more money that could be used to upgrade their ownO peration.

G&W has enough money to buy whole rail systems with cash. They DO NOT need public funds to complete this project. DO NOT feel obligated to assist a very well funded company.

Texas Taxpayer

MassDOT Response

Thank you for your comment.

B.26 Anonymous

Page 2-21 *[now page A-3]*: total federal participating project Cost of $144,000,000 for roadway reconstruction Hopkinton-Westborough doesn't add up to the sum of figures in the 2018-2022 funding source columns. All other totals add up in the table so this appears to be incorrect.

4-41 "encourage private shipping industry to adopt short sea shipping". This requires far more elaboration than just including it as a bullet point here. The capital investment for US flag short sea is significant and there have been a number of failed earlier attempts. Private sector will not pursue this on its own without clear support from industry and a multi-state coalition.

5-63 and 5-64 the list should include all railroads including short lines (such as the G&U) operating in Massachusetts.

In general, this draft has very little by way of trade flow data and statistics to support the recommendations as compared with the 2010 version, and has few specific, measurable objectives. While the evaluation of future disruptive technologies is a useful perspective to keep in mind, more emphasis is needed on how to ensure the Commonwealth invests to ensure competitive access for imports and exports. The plan should also support companies across all modes of transportation to create jobs and thrive.

MassDOT Response

Thank you for your comment. We have reconciled and updated all project costs in the final version of the document.

We have updated the language to state that Class III includes short-line railroads.

In general, the scenario-based approach in this Freight Plan placed less emphasis on trade flow data.

B.27 Anonymous, Cambridge

Figure 3.1 Map of Highway Freight Facilities in Massachusetts (Technical Memorandum #2) shows, incorrectly, a Route 2,

Alewife Brook Parkway, Fresh Pond Parkway, Gerry's Landing Road freight route in the Western Edge of Cambridge. This is not a permitted route for trucks (2.5 Tons, 7 feet). Trucks, and buses (12 seats), are excluded from Fresh Pond Parkway at Huron Avenue to the Charles River.

MassDOT Response

Thank you for your comment. The roads in question are labeled as "Other Major Roads" in the map key. Roads not on the National Freight Network were shown on the map both for context (at large freight vehicles are permitted on some of them) and also to recognize their importance for smaller freight vehicles (small trucks and vans).

B.28 Anonymous, Cambridge

I am very troubled by MassachusettsDOT's collaboration with the federal government and the TRUMP administration in developing this proposal

WHy do we need to work together with climate deniers and racists on a plan for OUR STATE?? please reconsider any collaboration with the current regime that gives legitimatcy to the illegal policies thaat they are pushing

I do not want my tax dollars to support their agenda, and I do not want Massachusetts DOT to use our trucks and trains to help DONALD DRUMPF build his concentration camps and deport my friends and family. do not collaborate. resist.

MassDOT Response

Thank you for your comment.

B.29 Anonymous, Chelsea

I am very impressed by this freight plan. One issue I would like to be considered is the increasing prevalence of companies operating with direct store delivery (DSD) models that promote efficiency by targeting store delivery and reducing or eliminating the need for the transfer of inventory between regional or intermediary warehouses. Many companies, like Goya Foods, have realized significant cost savings by pioneering these technologies. As newer communications technologies enable more effective DSD models through scanners, wireless communication, and planning software, do you anticipate an effect on freight models over time? It would seem that there may be a reduction in the need for drivers, or a shift from long and medium-haul trucking to a higher number of delivery models.

Do you also consider the impact on warehouse infrastructure changes as part of this freight plan?

MassDOT Response

Thank you for the comment. The scenario planning approach and recognition that changing land use and consumer patterns drive freight operations were intended to take into account some of these issues.

B.30 Anonymous, New Bedford

It is extremely important that freight access be provided between New Bedford's Marine Commerce Terminal in the south end of New Bedford and the existing rail line along MacArthur Drive. Further access to the New Bedford airport would greatly enhance the ability to ship fish product without having to use tractor trailers. Shipping vessels would bring fish to New Bedford for processing and then the processed fish could be shipped via freight rail to the New Bedford airport and then to other points without having to clog our already congested highways.

MassDOT Response

Please see the Massachusetts State Rail Plan for information regarding this project.

B.31 Anonymous, Quincy

In light of the devastation caused by Hurricane Harvey in Texas and across the Southeast, it is important to address the role of freight infrastructure during emergency situations and for disaster relief. For example, what modes of transport would be incapacitated by flooding, high winds, or extreme snowfall, and how do we ensure the delivery of essential goods and services when the traditional delivery methods for those goods are cut off.

Additionally, what role can existing freight infrastructure play for emergency relief. Are there plans in place to repurpose vehicles, containers, or other vehicles and machinery for relief, recover, and resupply efforts in the event of a natural disaster. I think the freight plan should address how the changing nature of freight increased use of electrification or automated technologies- may impact the ability to use shipping resources during disasters.

MassDOT Response

Thank you for your comment. MassDOT is currently conducting a climate change vulnerability assessment study for critical freight system assets.

Although outside of the scope of the State Freight Plan, this is an important question. Please see the Massachusetts Emergency Management Agency website for more information on disaster relief in the Commonwealth:

https://www.mass.gov/orgs/massachusetts-emergency-management-agency