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FREIGHT COMMITTEE
of the
REGIONAL TRANSPORTATION ADVISORY COUNCIL

Summary of April 22, 2009 Meeting

This meeting was held in the MPO Conference Room at the State Transportation Building.

The meeting was called to order at 1:05 PM.

1. Introductions and Chair's Report –Walter Bonin, *Chair and City of Marlborough*
W. Bonin had no reports and asked if there were any member announcements.

Steve Olanoff, Town of Westwood, announced that the United Planning Work Program (UPWP) Committee met and is accepting study proposals. S. Olanoff requested that the Freight Committee recommend to the Regional Transportation Advisory Council (RTAC) that they submit a freight study proposal to advance the recommendations of the Executive Office of Transportation's (EOT's) Statewide Freight and Rail Plans, expected to be completed by the Fall of 2009.

Frank Demasi, Vice Chair and Town of Wellesley, expressed concern that the recently proposed federal Transportation Infrastructure Bill is not as comprehensive as an earlier bill. F. Demasi supports the development of a Transportation Infrastructure Fund that allows highway monies to be flexed to freight investment.

Members reviewed the previous month's discussion with Massachusetts Environmental Policy Act (MEPA) officials and discussed the importance of getting involved in the public comment process for environmental reviews. Members agreed to stay updated on further MEPA reviews of Beacon Yard and on drafts of the Statewide Freight and Rail Plans (in order to be prepared to ask that any resulting environmental reviews address displaced traffic and regional impact concerns that could result from right-of-way closure at Beacon Yard).

Members expressed interest in receiving an update on the Statewide Freight and Rail Plan from EOT officials at an upcoming meeting and asked staff to make arrangements.

2. Approval of Meeting Minutes
The minutes of March 25, 2009 were approved unanimously.

3. Discussion of "Benefits of Freight Rail" Presentation to the Advisory Council

Walter Bonin provided a handout of Massachusetts's 1989 freight goals and discussed whether any of the goals were met over the past 20 years. Members suggested the following challenges and obstacles of meeting freight needs in the Boston Region:

- *There is no rate structure in the Boston Region and it is unlikely that one will be created since CSX is the sole owner of freight railroads in the greater Boston area.*

- *Commuter needs continue to expand, which further limits the opportunities for freight*

F. Demasi presented members with his powerpoint, "Benefits of Freight Rail," that noted the environmental and economic advantages of freight movement by rail over truck. Members recommended the following strategies to enhance freight in the Boston Region:
- Short line railroads to enhance rail's capabilities in the short haul market
- Corridor developments ("linear city") to increase development surrounding rail lines; requires proper zoning in communities along corridor
- Joint use of rails by passenger and freight services to improve freight rail utilization and efficiency

Members discussed the need to enhance support of more rail use and stated the following approaches and concerns:
- Increase public financing by flexing American Recovery and Reinvestment Act (ARRA) highway funds to public and private rail investment
- There are no freight project proposals currently in the Transportation Improvement Plan (TIP), though proposals from CSX and other private rail lines are eligible for consideration
- Additional signaling improvements, and crossoverswitch and interlocking points are needed to allow trains to change tracks more effectively to increase the efficiency of the rail networks at relatively lower costs than acquisition of ROW to control dispatching trains

Members discussed additional study proposals for the UPWP, including a short line feasibility study and a truck to rail diversion study. Members believe these studies will support both the increase of freight movement by rail and the overall efficiency of freight movement. The Committee agreed to ask staff to draft the study proposals.

7. Adjourn
The meeting adjourned at 3:00 PM.

Attachments: Freight Rail Resolution
Massachusetts Guidelines for a State Infrastructure Bank (SIB)

Attendance

Agencies
Lynn Vikesland, Massport

Cities and Towns
Walter Bonin, Marlborough
Frank DeMasi, Wellesley
Steve Olanoff, Westwood
Tony Centore, Medfield

Citizens Groups

Guests and Visitors
Ed Lowney
Richard Flynn, NorthEast Logistics Systems, LLC

MPO Staff
Anne McGahan
Sean Pfalzer
Pam Wolfe

Massachusetts Guidelines for a State Infrastructure Bank

Section 1602 of the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of **2005** established a new State Infrastructure Bank (SIB) program under which **all States** are authorized to enter into cooperative agreements with the Secretary to establish infrastructure revolving funds eligible to be capitalized with Federal transportation funds authorized for fiscal years 2005-2009.

States that have adopted an SIB program have had success in funding their transportation needs. Some of the original ten pilot states have seen their transportation dollars grow over the 12 years of investment and reinvestment. For instance, as of September 2005 Ohio had over $135M invested in fifty-seven transportation improvements across the state.

Freight and Leveraging

Along with a Highway Account and a Transit Account, SAFETEA-LU has added the fourth account for Rail projects. This allows certain federal funds to be used for freight expansion where, for instance, railroad companies or rail entities could use SIB funds for freight expansion or improvements or dual use of MBTA rail lines. Rail connections between our marine ports and regional trucking facilities could be funded. Repayments to the bank using revenues or shipping fees collected would essentially be leveraging private investments. As paybacks these private investments would also be available for funding future projects.

The Massachusetts Association of Regional Planning Agencies (MARPA) and the Massachusetts Association of Chambers of Commerce Executives (MACCE) have both expressed interest in supporting a Massachusetts State Infrastructure Bank

Preliminary measures to be added to any SIB legislation

A few preliminary measures in preparation for a possible Massachusetts SIB include.

1. **A Draft Guidebook**. Other states have implemented guidebooks for the application process and the disbursement process of their SIB. The proposed Massachusetts Guidebook would take only the best examples from other states and include them in a simple, easy to read draft that outlines the proposed application process and the disbursement and payback options.

2. **A Draft Cooperative Agreement**. As required by SAFETEA-LU, work with the Patrick Administration and the Secretary of the Executive Office of Transportation and Construction will be needed to prepare a draft cooperative agreement between the Commonwealth and the U.S. Secretary of Transportation. This draft agreement will insure the willingness of the executive branch to participate and will be necessary for consideration of this legislation.

Adapted from the Massachusetts Infrastructure Investment Coalition by Frank Demasi

ADVANTAGES OF FREIGHT RAIL

Presented to the Regional Transportation Advisory Council (RTAC)
By Walter Bonin/Frank DeMasi (RTAC) Freight Committee May 09

Role of the Executive Office of Transportation and Public Works (EOTPW)

The Executive Office of Transportation and Public Works is the principle architect of transportation planning and development in the Commonwealth.

Chapter 6A of the General Laws describes the scope of EOT's mandate and establishes EOT's role with respect to MassHighway, the MBTA, Massport, the Turnpike Authority, Regional Transportation Authorities (RTAs), and other agencies.

Chapter 161C provides a broad and unambiguous statement of legislative intent with respect to rail transportation and EOT's role in carrying out that intent.

The Executive Office [of Transportation and Public Works} shall take such steps as may be necessary to provide for:

The development, promotion, preservation, and improvement of an adequate, safe, efficient and convenient rail system for the movement of passengers and freight in the Commonwealth.

***In carrying out the purposes of this Chapter, the Executive Office shall seek to encourage and develop rail services which promote and maintain the economic well-being of the citizens of the Commonwealth, and which preserve the environment and the Commonwealth's natural resources.*"**

Environmental Advantages of Rail

Every railcar trip removes approx three truck trips from congested highways

Railroads can move a ton of freight 3 times as far as 3 trucks on a gallon of fuel

Per ton-mile, railroads emit 1/10th the hydrocarbons and diesel particulates as trucks, and 1/3 the oxides of nitrogen and carbon

Rail energy intensity, is 444 Btu/ton mile, and 3,337 Btu/ton mile for trucks

Freight rail efficiency has improved 72% since 1980, saving 2.8 billion fewer gallons of fuel in 2003

A single intermodal train can take 280 trucks off our highways

Studies have estimated cost of highway traffic congestion in the US is $69.5 Billion, representing a cost of 3.5 billion hours of extra travel time and 5.7 billion gallons of fuel wasted sitting in traffic

Infrastructure Impacts of Trucks

Hidden Externality costs of long haul trucking are:

- **Pavement wear/tear**
- **Congestion costs**
- **Accident costs**
- **Excess user costs**
- **Air Quality**
- **Noise impacts**
- **Health/environment impacts**
- **A truck weighing a legal 80,000 lbs. GVW is more then twice as likely to be involved in a fatal crash than a truck weighing about 50,000 lbs. GVW. (University of Michigan Transportation Research Institute, 1988).**

Pavement damage is caused almost entirely by heavy trucks, not by passenger cars. One legal 80,000 lbs. GVW tractor-trailer truck does as much damage to road pavement as 9,600 cars. (Highway Research Board, NAS, 1962).

Environment and Congestion Mitigation – Air Quality

	EMISSIONS FACTORS (Grams per Vehicle Mile)		EMISSIONS FACTORS (Grains per Revenue Ton-Mile)	
	RAIL	TRUCK	RAIL	TRUCK
Carbon Monoxide (CO)	2.99	3.15	0.030	0.157
Nitrogen Oxides (NOx)	20.24	20.60	0.202	1.030
Volatile Organic Compounds (VOC)	1.10	2.74	0.011	0.137
Particulate Matter (PM)	0.70	1.24	0.007	0.062
Assumes 100 tons per car by rail and 20 tons by tractor-trailer distance of 750 miles.				

- **The American Trucking Association (ATA) estimates trucking spent a record $135B on diesel fuel in 2008, $22B more than 2007**
- **Global Insight, Inc, forecasts shortage of long haul truck drivers @ 111K by 2014**
- **ATA estimates cost of driver turnover is $10K/1,000 drivers at 120% turnover = $12M/year**
- **Texas Transportation Institute estimates highway congestion cost trucking $168B/year**

EXTERNALITY COSTS OF LONG DISTANCE FREIGHT

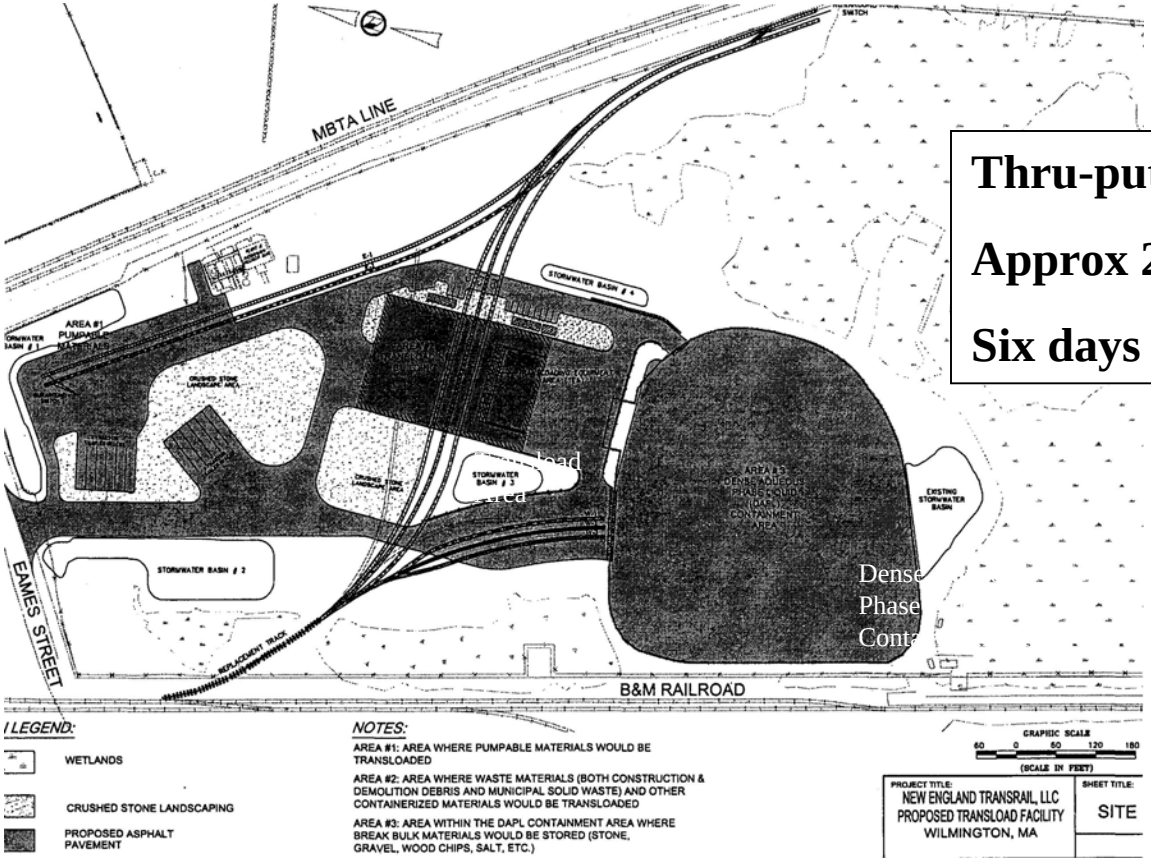
A transload facility moving 2,500 tons per day, six days per week, 52 weeks per year, 750 miles, generates Externality Costs (Million $'s/year) @ $4.9 M for rail - $89.3 M for truck (87% More)

100 TONS PER RAIL CAR, 20 TONS PER TRACTOR-TRAILER

	RAIL FREIGHT	TRACTOR-TRAILER
Pavement Wear & Tear	$0	$18,954,000
Excess User Costs	$0	$8,950,500
Congestion Costs	$0	$7,020,000
Air Pollution	$1,193,400	$6,318,000
Noise Impacts	$2,667,600	$11,337,300
Accident Costs	$1,067,040	$36,679,500
TOTAL COST (Both Dir)	$4,928,040	$89,259,300
COST PER TON	$6.32	$114.44

	Gallons of Diesel Fuel Per Year		
	Tractor-Trailer	Rail	Saving
Fuel Use at 100 tons rail/20 tons truck	9,915,254	2,854,800	7,060,454
Fuel Use at 64 tons rail/8.9 tons truck	22,033,898	4,453,488	17,580,410

New England Transrail LLC proposed Transload Facility –Wilmington/Woburn MA



Thru-put projected at

Approx 25 Carloads per day

Six days per week

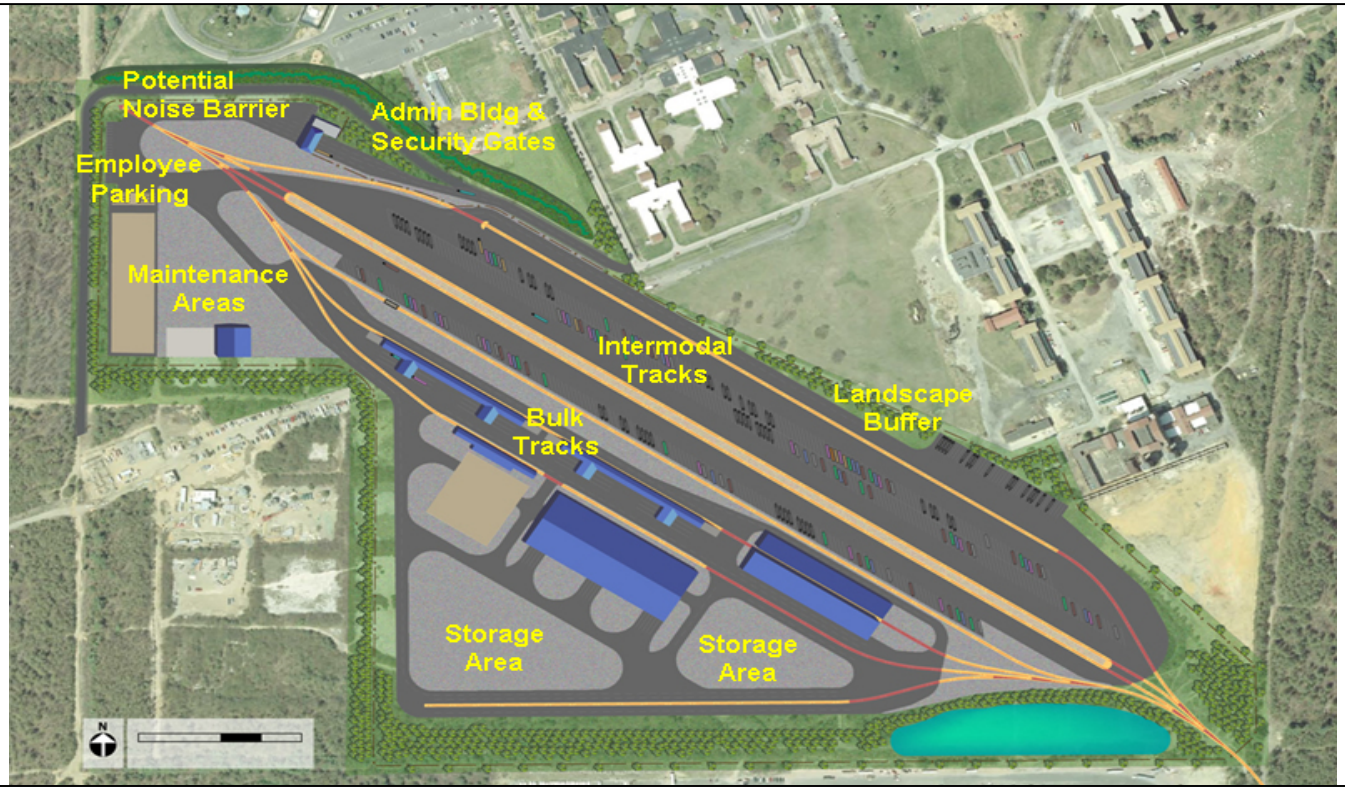
The rail facility proposed would handle approximately 25 rail cars a day, off loading highways by over approximately 180 interstate truck trips each day. Estimates made of the opportunity costs of removing these trucks would save approximately $6 million a year in costs to the state.

Local communities require mitigation of the impact of such operations in their area, however the regional benefit is great, Jobs for locals, tax revenue resulting from economic development, and improvement in the region's air quality.

Freight Villages: Defined FHWA Data Source

- Cluster of freight-related business
- In a secure perimeter
- Single management
- Master planned
- Near cities
- High quality settings
- Support services

Long Island NY Proposed Freight Village Template



THE LAYOUT OF A FREIGHT VILLAGE:

Warehouse, both bonded and non-bonded with 4000 m2 of storage and cross docking facilities. Backed by our Land Logistics division, we also provide distribution services.

Container Freight Station providing stuffing and unstuffing of containers and cargo consolidation service.

Container Depot for storage of empty and laden containers with cleaning, maintenance and repair services.

Intermodal terminal for interchangeability of transportation modes from rail to road and with direct connectivity to both.

A Transload Area with Team Tracks for independent enterprises to receive/ship bulk commodities or construction materials/finished goods.

A Transload Facility to handle Construction and Demolition Debris and Solid Municipal Waste

Adequate Green Space and Buffers/Fencing and earthen burme to provide soft edges to surrounding abutters

Direct Cost to Move Freight

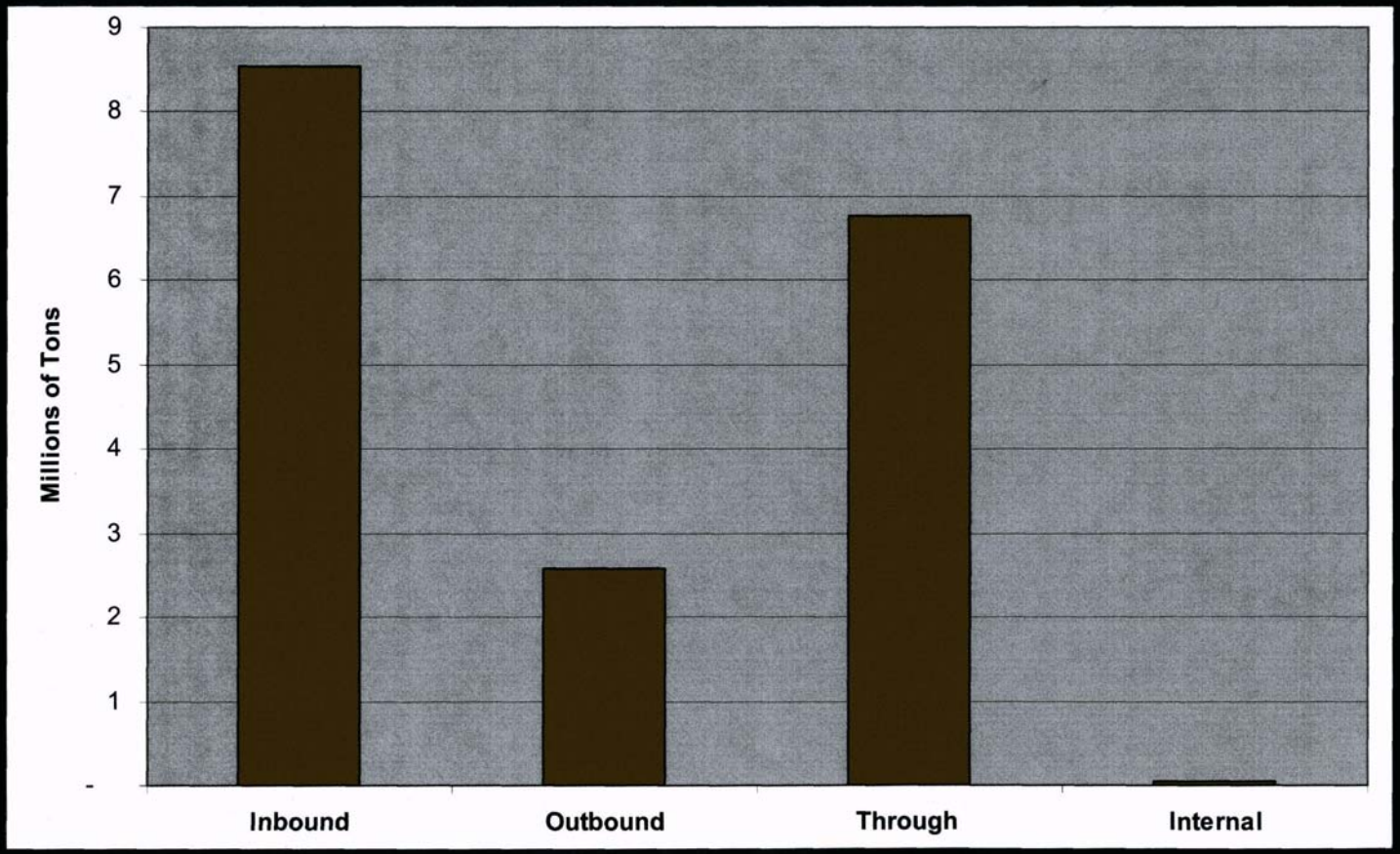
There is a savings of approximately 67% to 83% for using railroad services for moving freight long distances

The cost to move freight by rail a distance of 750 miles ranges between $2,000 and $4,000 per rail car depending on the commodity moved

At 100 tons per rail car, this works out to between *$20 and $40 per ton by rail*

This compares to approximately $2,400 for a tractor-trailer truck moving 20 tons of freight 750 miles and returning empty, for a cost of *$120 per ton by truck*

Shipping Patterns of MA Rail Freight Flows



EOT Freight & Rail Plan

Source: 2007 Global Insight TRANSEARCH database

Over 18 million tons of freight were moved by rail in - out - and through Massachusetts in 2007
Over 265 million tons of freight were moved by truck

Railroads: A component of remedy for Infrastructure, Environmental, Economic Development Deficiencies

Estimated Benefits of Rail Freight *(FHWA Freight Analysis Framework):*

If the current volume of rail freight carried in and through Massachusetts were diverted to trucks, over 1 million additional truck trips would be needed each year.

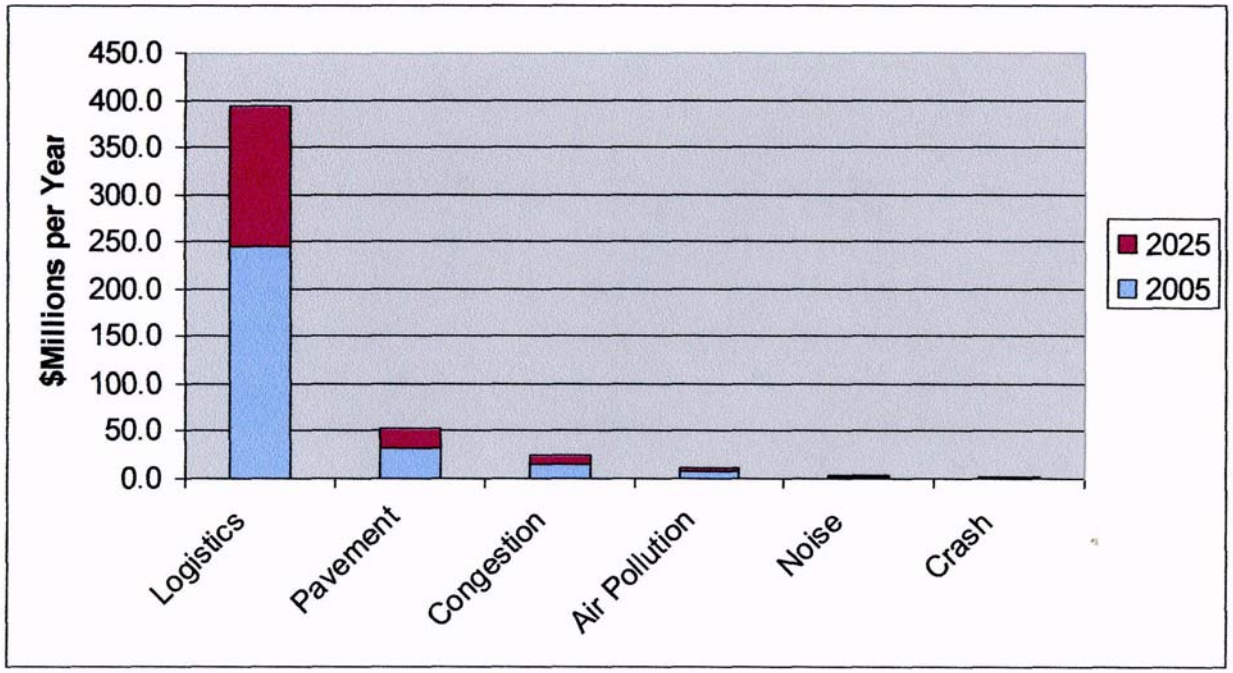
Added pavement wear and tear avoided would be $32 million/yr, congestion costs to commuters would amount to $15 million/yr, Costs related to emissions, noise, and traffic accidents would be $10 million/yr.

Logistics cost savings of the existing customer base, using rail are estimated at $250 million per year.

A truck weighing a legal 80,000 lbs. GVW is more then twice as likely to be involved in a fatal crash than a truck weighing about 50,000 lbs. GVW. (University of Michigan Transportation Research Institute, 1988).

Pavement damage is caused almost entirely by heavy trucks, not by passenger cars. One legal 80,000 lbs. GVW tractor-trailer truck does as much damage to road pavement as 9,600 cars. (Highway Research Board, NAS, 1962).

Estimated Benefits of Rail Freight



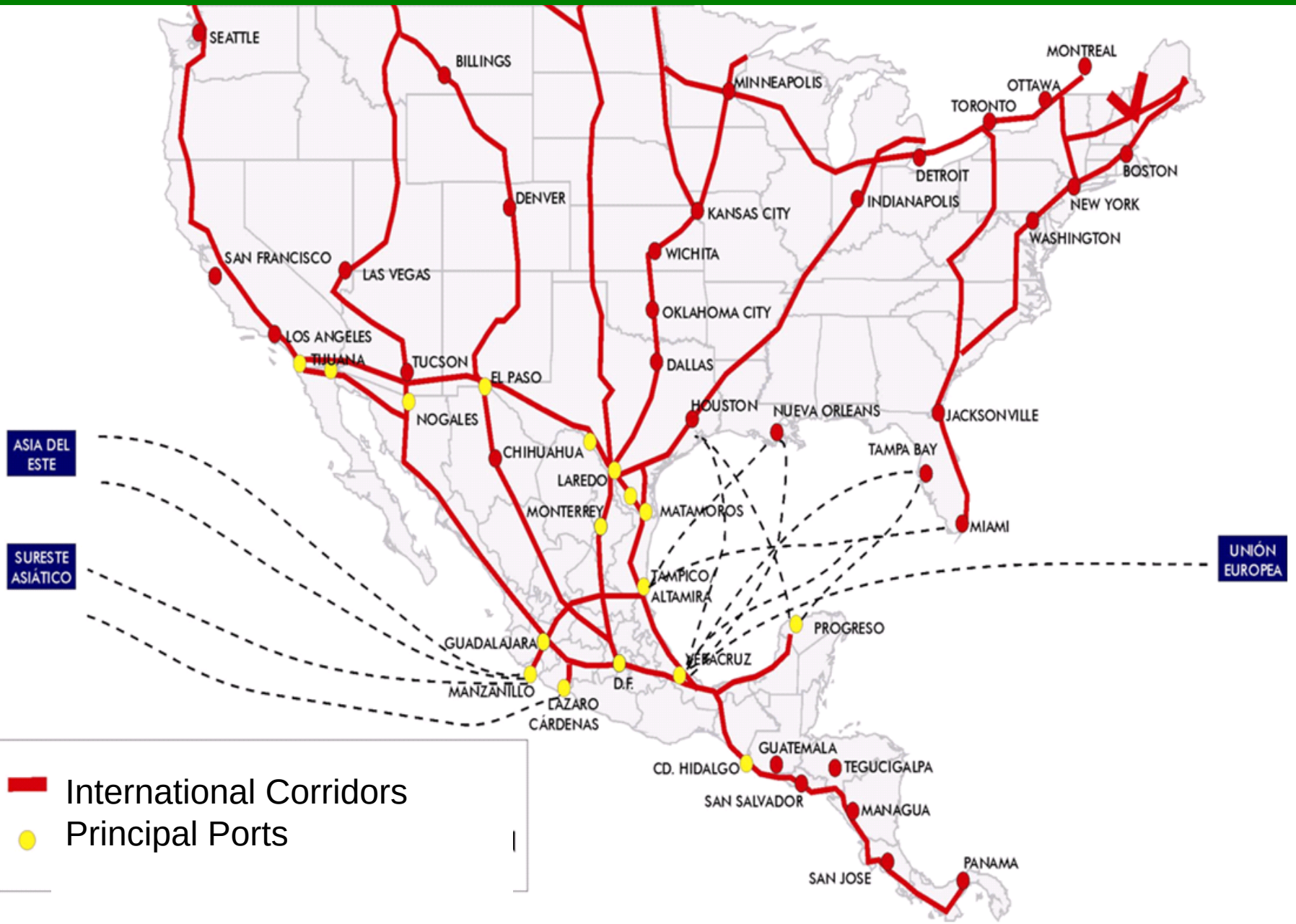
Source: Analysis based upon forecasts from FHWA Freight Analysis Framework and social costs from the Highway Cost Allocation Study; logistics benefits are assumed to be $0.02 per ton-mile.

1 million+ additional truck trips needed to handle freight moved by rail each year
Moved by highway, added pavement damage would = $32 million/yr
Congestion cost to commuters = $15 million/yr
Costs related to emissions, noise, traffic accidents = $10 million/yr
Costs in above figure = $58 million/reflect social benefits realized in MA

Data from: ***Massachusetts Rail Trends and Opportunities*** - Prepared for EOTPW By Asset Performance Management, Inc

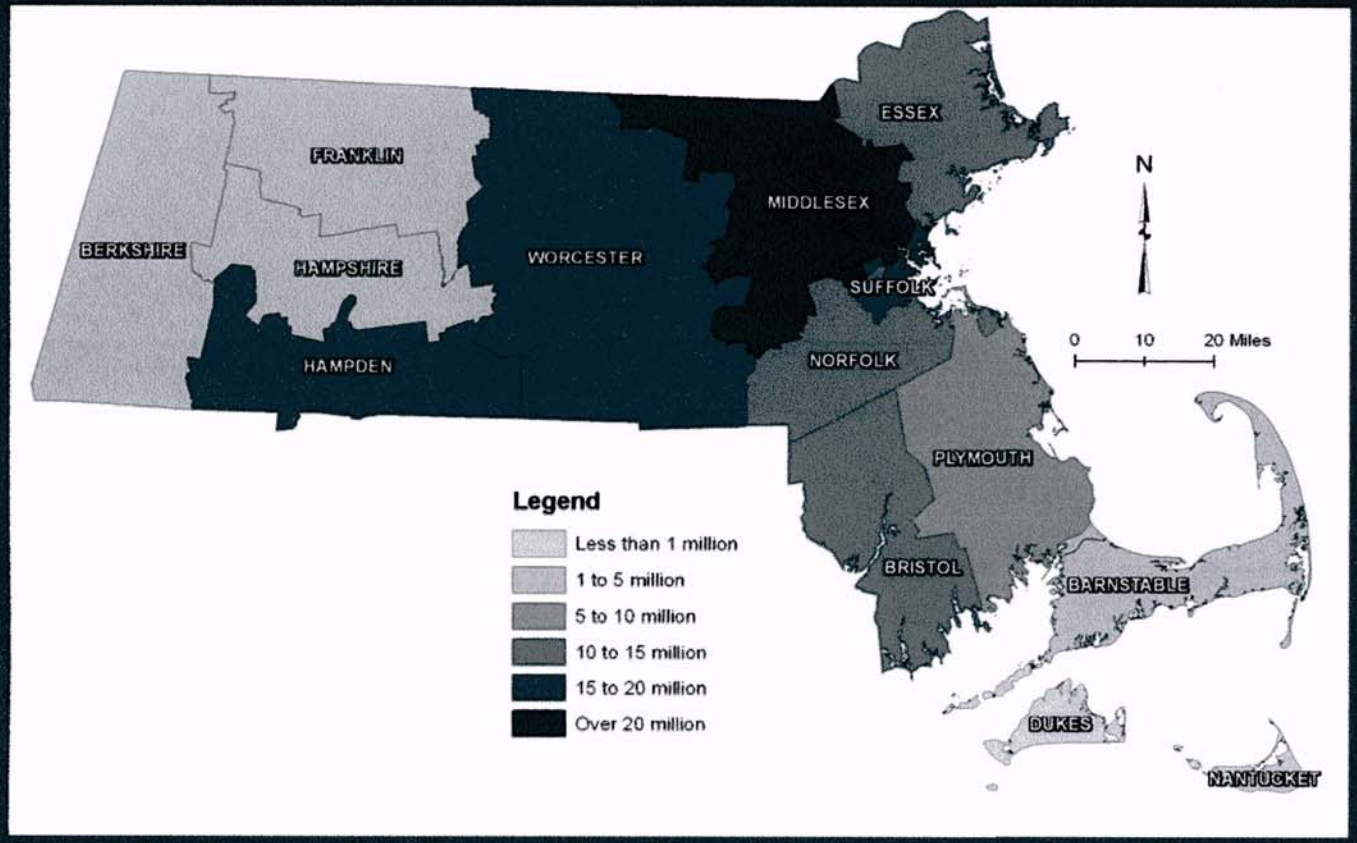
The Regional & National Perspectives

PRINCIPAL STRATEGIC CORRIDORS

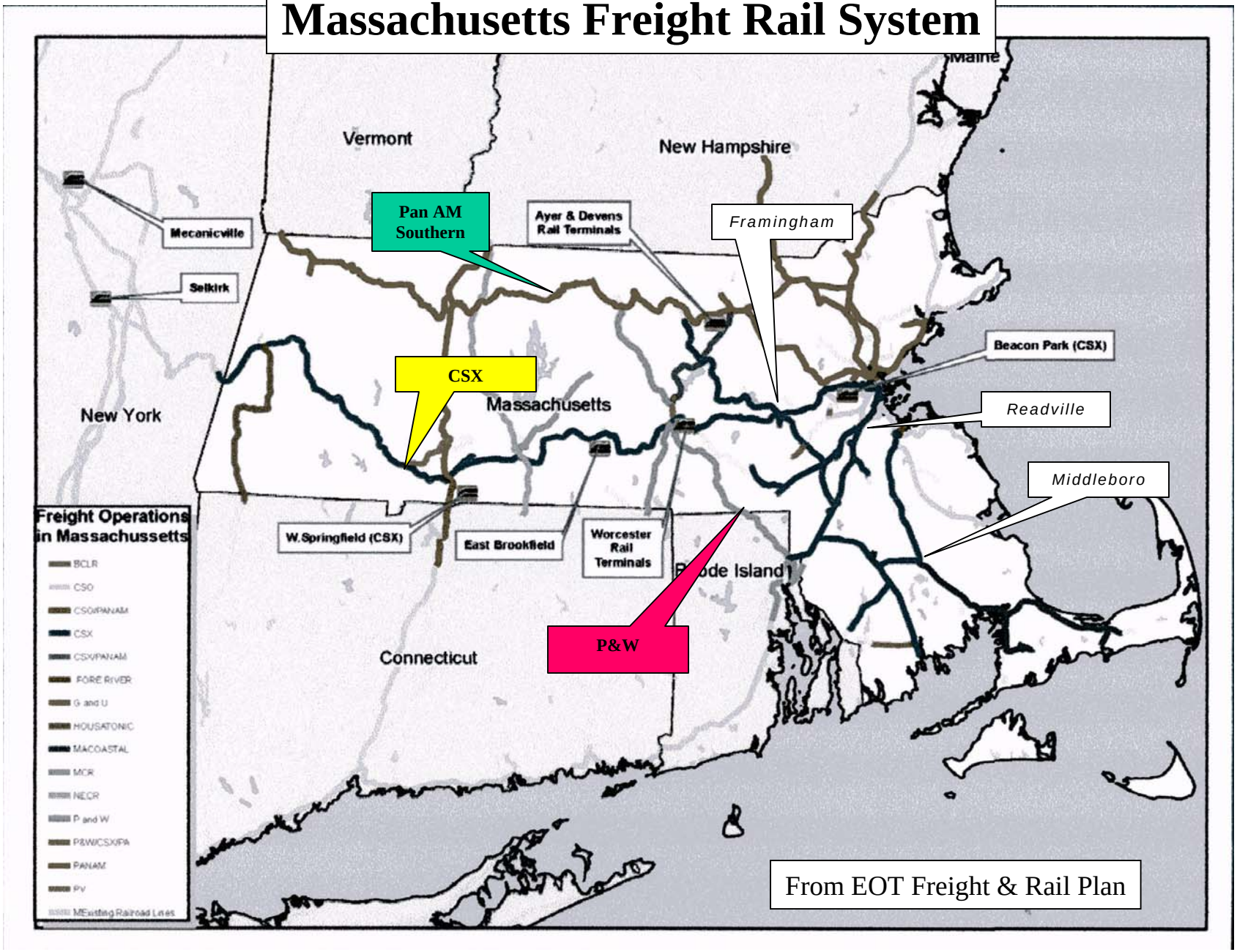


Development of Strategic Corridors

Freight by Destination County in MA



Massachusetts Freight Rail System

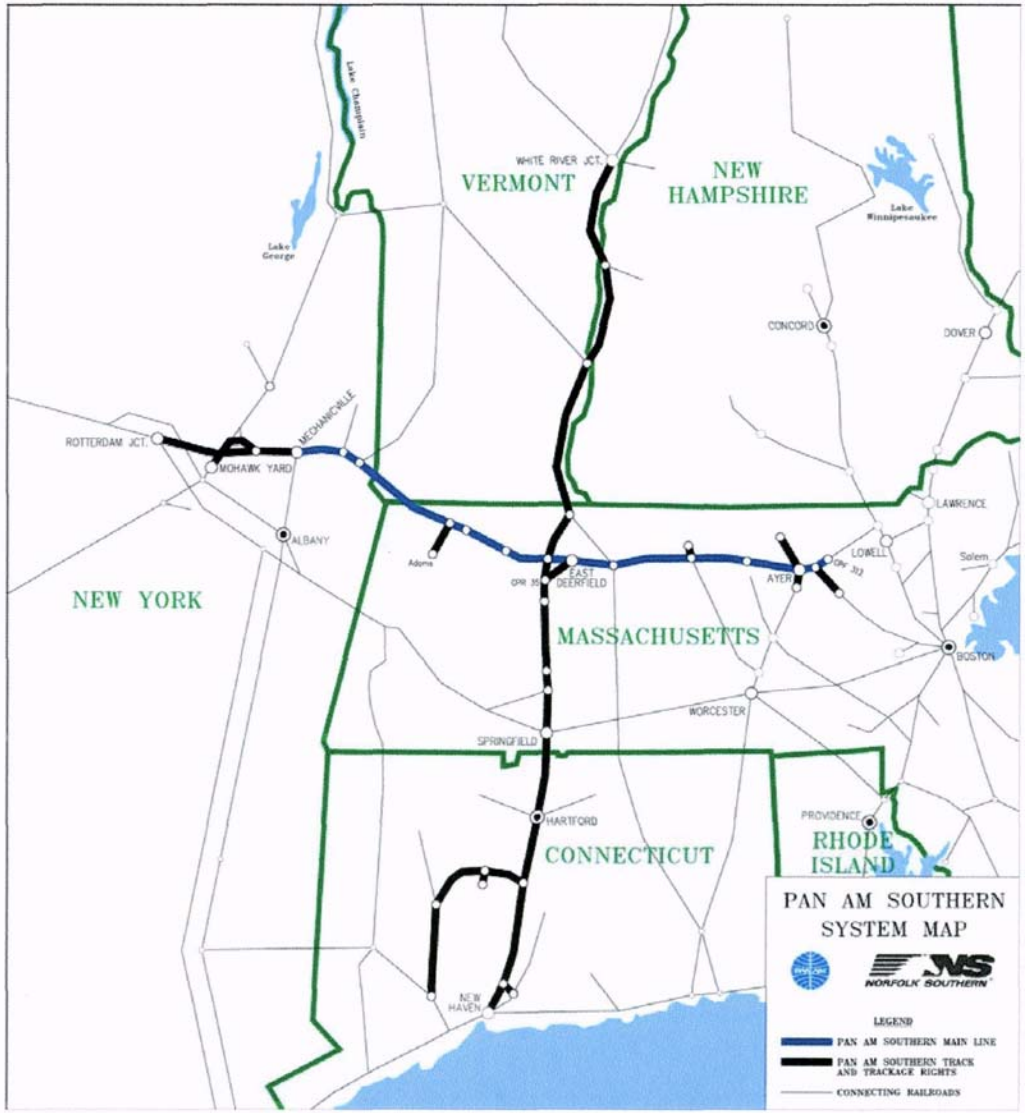


Pan Am Southern (PAS) will operate:

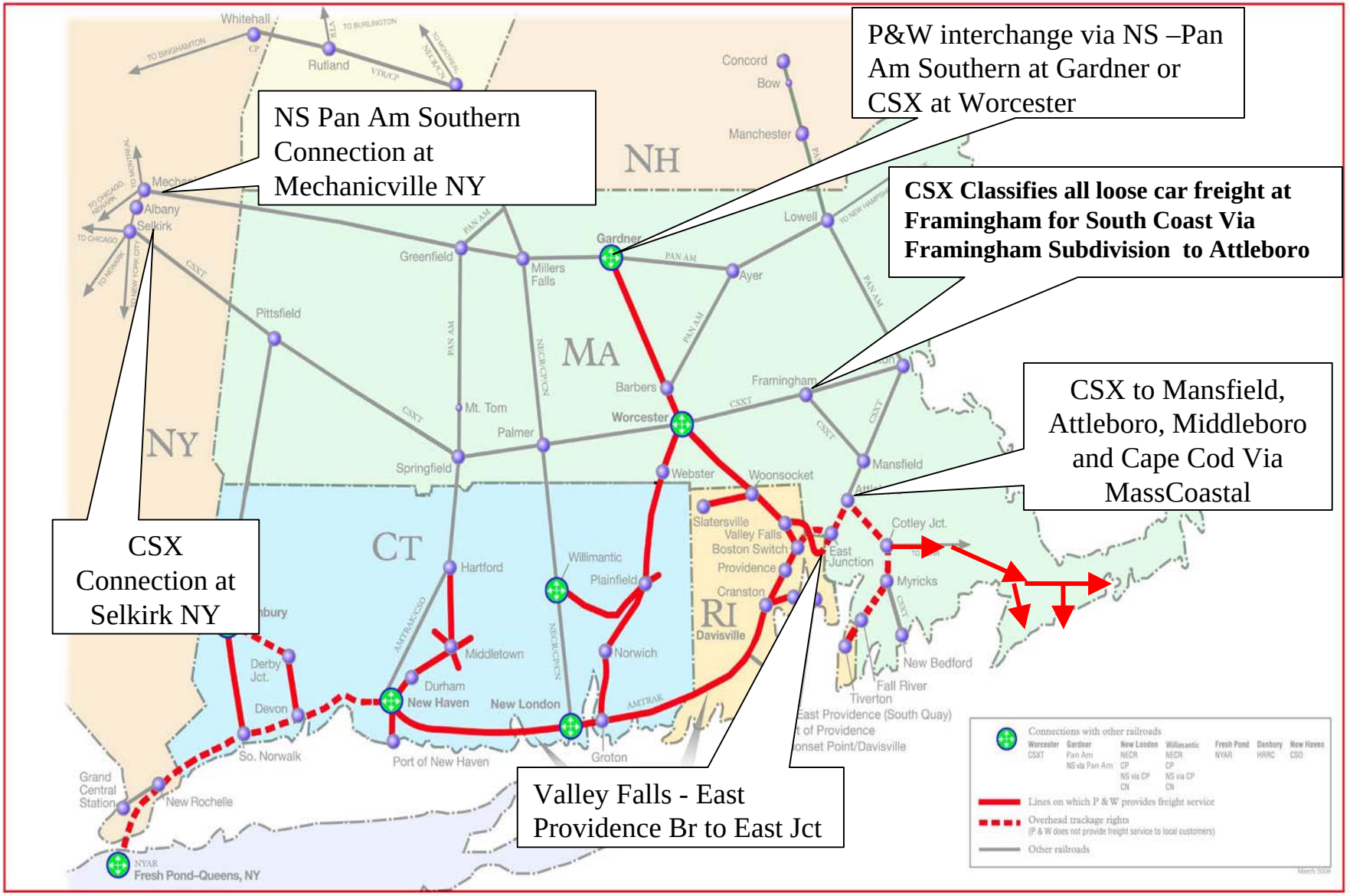
- Between Rotterdam Jct., NY and Ayer, MA

- Between White River Jct., VT and New Haven/Derby, CT.

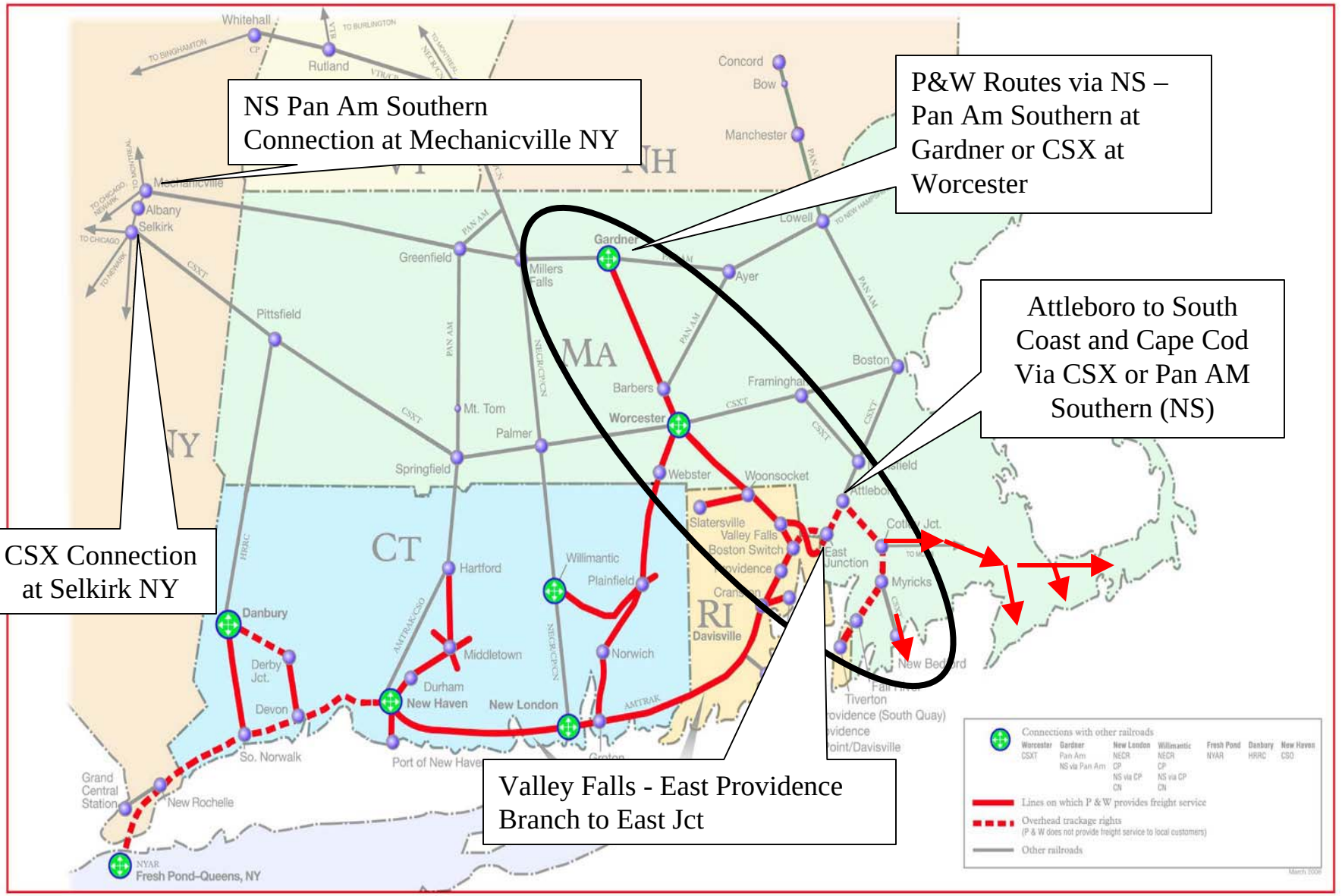
The main line – denoted in blue – is “The Patriot Corridor”



Existing CSX South Coast Rail Freight Service Via Selkirk, Framingham, Mansfield, Attleboro, Fall River, New Bedford, Middleboro, Cape Cod



Proposed Alternate Rail Freight Service Via P&W interchange at Worcester - CSX or Gardner - Pan Am Southern (NS)



Massachusettes Short Line Railroads

Our 11 regional and short line railroads are fully engaged at their own expense to bring sustainable business into our region for the economic benefit of all.

The American Short Line and Regional Railroad Association statistics for 2004 show that Short Line railroads operating in Massachusetts

- **Handled 109,000 railcars**
- **Removed 247,000 trucks off our congested/stressed roads and bridges**
- **Avoided an estimated $19,000,000 in pavement damage**

In 2004 these railroads spent $16,883,238 on Capital and Maintenance expenditures to provide reliable service to over 100 in-state customers.

Their marketing efforts in 2004 brought 11 new facilities on line creating 268 new jobs in the Commonwealth.

Their safety record is one of the best in the nation.

Massachusetts, unlike most of the surrounding states that our short lines compete with to retain and add new customers, *has no programs to assist in the development of freight rail infrastructure or provide support for siding installations for the companies they attempt to locate here*

Intermodal/Short Line Freight Rail Operations to Gateway Cities/Ports

It is suggested that the CSX Boston Cluster, the Fitchburg, Franklin, Fairmount, and CSX South Coast Branch Lines be operated as a "third party" Terminal Railroad, or one or more Short Line Railroads concurrent with MBTA, over state owned ROW as shared assets.

EOT ownership of CSX Freight Lines emanating from Worcester and Framingham would allow a contracted Terminal Rail operation to serve the ports of New Bedford, Fall River, and Boston. MBTA owns the Fitchburg line with direct rail connections from Ayer to Moran Terminal.

Interchange with Norfolk Southern(NS)/Pan Am at Ayer would provide connections to our Gateway Cities/Ports (Salem/Gloucester) and to the North American Rail System and Canada and Mexico

Terminal rail/Short Line operations contracted out by EOT would free CSX and NS/Pan Am from the high cost of terminal operations while providing the Commonwealth with an independent, publicly owned, controlled, and efficient, modern intermodal rail distribution system.

Freight Rail Yards and Terminals in Massachusetts

Location	Operator	Facility Type	Estimated Size [1]	Interchanging Railroad[2]
Interchange/Switching				
First St., South Boston	CSX	Switching	N/A	
Prescott St., Readville	CSX	Switching	15-20 acres	
Nevins Yard, Framingham	CSX	Switching	8.5 acres	
North Yard, Framingham	CSX	Switching	14 acres	
CP Yard, Framingham	CSX	Switching	N/A	
Walpole	CSX	Switching	3.5 acres	
Westborough	CSX	Switching	20 acres	
Palmer	CSX	Switching	8 acres	NECR, MCER
Palmer	NECR	Switching	4 acres	MCER, CSX
Springfield Yard No. 3	PAR	Switching	N/A	
Pittsfield	CSX	Interchange/Switching	48 acres	HRRC
Pittsfield	Housatonic	Switching	25 acres	
East Deerfield[3]	PAR	Switching	181 acres	
Grossman Dr., Braintree	CSX	Switching	6 acres	
Middleborough	CSX	Switching	3 acres	
Fall River	CSX	Switching	3 acres	
New Bedford	CSX	Switching	40+ acres	
Lowell	PAR	Switching	N/A	
Lawrence	PAR	Switching	N/A	
Salem	PAR	Switching	N/A	
Inactive				
Garden St., Worcester	PAR	Inactive	9 acres	
Pittsfield	PAR	Inactive	11 acres	
Willow Road, Ayer[4]	PAR	Inactive	40 acres	

Notes:
1. Acreage estimates are based upon municipal assessor's data or other unconfirmed sources.
2. "N/A" indicates information either "Not Applicable" or "Not Available".
3. East Deerfield Yard includes 64 acres owned by EOT.

Data from: ***Massachusetts Rail Trends and Opportunities*** - Prepared for EOTPW By Asset Performance Management, Inc

Top Ten Truck Commodities with an Origin or Destination in MA

Commodity - Total O&D	Truck Tons	% Share
Secondary Traffic	50.87	21%
Petroleum Or Coal Products	39.52	16%
Nonmetallic Minerals	38.26	15%
Clay, Concrete, Glass Or Stone	35.13	14%
Food Or Kindred Products	24.25	10%
Chemicals Or Allied Products	20.17	8%
Primary Metal Products	7.00	3%
Pulp, Paper Or Allied Products	5.01	2%
Lumber Or Wood Products	4.76	2%
Fabricated Metal Products	4.59	2%
Total	247.50	93%

Freight & Rail Plan

Top Ten Rail Commodities with an Origin or Destination in MA

Commodity - Total O&D	Rail Tons	% Share
Misc Mixed Shipments	2.15	19%
Chemicals Or Allied Products	1.44	13%
Food Or Kindred Products	1.33	12%
Pulp, Paper Or Allie Products	1.21	11%
Farm Products	0.87	8%
Waste Or Scrap Materials	0.82	7%
Transportation Equipment	0.71	6%
Nonmetallic Minerals	0.64	6%
Or Stone	0.58	5%
Lumber Or Wood Products	0.53	5%
Total	11.23	

Freight & Rail Plan

Note: Though there are 1.3 million tons of coal traveling on MA rail, 1.1 million are through and thereby not reflected

Opportunities for Diverting Freight from Truck to Rail				
Commodity	**Truck Tons**	**Truck% Share**	**Rail Tons**	**Rail % Share**
Non-Metallic Minerals	**38.26**	**15%**	**.64**	**6%**
Food/kindred prod	**24.25**	**10%**	**1.33**	**12%**
Chemicals/Allied Prod	**20.17**	**8%**	**1.44**	**13%**
Pulp Paper/Allied Prod	**5.01**	**2%**	**1.21**	**11%**

From EOT Freight & Rail Plan

Data Needs for Truck-to-Rail Modal Diversion Modeling*

Definition of Market

- **Origin/destination pairs**
- **Types of commodities**
- **Size of shipment load**

Market

- **Commodity flow data for defined market area**
- **Conversion factors for tons to units calculation (Vehicle Inventory/Use Survey)**

Service Sensitivities

- **Stated-preference survey results for defined market**
- **Consist of data intensive surveys with shippers/receivers that meet market definition**

Alternative Levels of Service

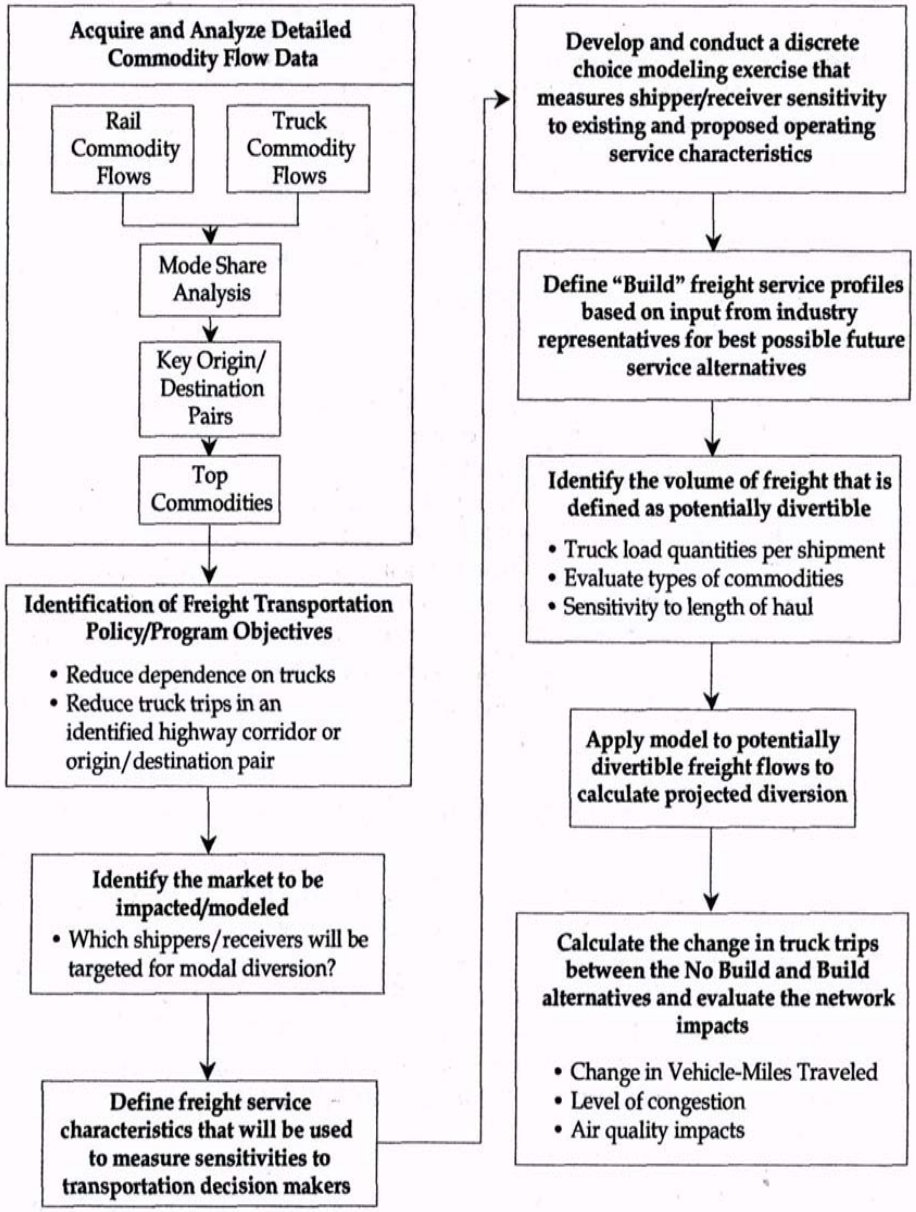
- **Level of service matrices for each defined alternative**
- **Development of new/future service alternatives should be based on private sector expertise, ideally from the transportation service providers**
- **Future alternatives should be based on desired goals/ objectives of transportation policy**

Impacts

- **Truck trip tables for each alternative to model highway impacts and other secondary impacts such as air quality**

Adapted from Cambridge Systematics Inc. "Vermont Statewide Freight Study

TRUCK TO RAIL DIVERSION IMPACT MODEL - Development & Application *



Adapted from Cambridge Systematics Inc. "Vermont Statewide Freight Study

Massachusetts needs a Port Inland Distribution Network

The Port of New York and New Jersey developed Port Inland Distribution Network (PIDN). Should be emulated in Commonwealth by EOT/MassPort/MassHighway by developing short haul intermodal lanes

Hub-and-spoke system designed to move containers by barge to water accessible ports, Bridgeport, Ct, Camden, NJ (rail service being considered): Providence, RI, and Boston, MA. New Bedford /Fall River should also be included.

Rail connections access terminals in New York, New Jersey and Pennsylvania in addition to existing rail service between the Port of New York and New Jersey and Worcester and Ayer MA.

Massachusetts North Shore freight terminals lack adequate rail connections. Boston and South Coast port rail connections need to be improved via Framingham and Attleboro.

Inland terminals are located at/near centers of marine customer service/distribution activities in l3-states. 82% container market in 13-state area found in 50-mile radius of these clusters!

Benefits of a Massachusetts Port Inland Distribution Network

Improves Container Handling

Reduces dwell time

- lowers empty container repositioning costs
- Improves container turnaround times
- Increases equipment utilization
- Enhances response time with an empty container depot and chassis pool

Creates Sustainable Environmental Benefits

Reduces traffic congestion on the hub port, highways, and major service routes.

- Lowers total truck vehicle miles traveled and fuel consumption
- Improves air quality

Expands logistics and warehousing Opportunities

- Expands use of water and rail network to meet customer needs
- Reduces inland distribution costs by means of economies of scale and enhanced logistics control
- Creates value added warehousing and distribution opportunities at feeder ports – especially for “heavy” containerized freight

Builds new partnerships

Expands use of barge and rail in port distribution

- Helps truckers better use limited manpower to meet growing drayage needs
- Creates more efficient use of trucks and lower turnaround times at new feeder ports, and focused drayage opportunities

Rail Freight Infrastructure Needs

- **Double stack/Vertical Clearances**
- **Passing tracks**
- **Modern yard/terminals**
- **19th to 21st century design**
- **curvature and track condition Improvements**
- **Weight capacity compliant 286,000# –pound cars**

Conclusion – Legislative Action

Legislation proposed as House Bill 3355 is needed to create A Transportation Infrastructure Fund to provide financial assistance for a *Rail Capacity Improvement and Freight Diversion Program* by enabling the Commonwealth to partner with railroads, through the collaboration of MassHighway, EOTPW, MBTA, MassPort, the Executive Office of Housing and Economic Development, and private stakeholders including industry, warehousing, and logistics providers

This legislation would reduce significantly the adverse impacts of transportation of the majority of freight by highway:

- **Reduce traffic congestion on major arterials and interstate highways by increasing rail capacity for diverting both passengers and freight**
- **Increase the competitive advantage of trade for the region, create jobs, and foster economic development opportunities to retain and attract industry**

Creation of public private partnerships to invest in expanding rail capacity, and modernize branch rail lines, would reduce the significant burden Truck Freight imposes on the Commonwealth's infrastructure and environment.

Advantages of Freight Rail - Additional Information

Please open in Note Pages View for additional narrative

Massachusetts General Law Chapter 161 C, Par. 1

"It is hereby declared:

that rail transportation offers economic and environmental advantages with respect to land use, air and noise pollution, energy efficiency, safety and costs per ton mile of movement to the extent that the preservation, development and maintenance of such services is a public purpose and in the public interest;

that essential rail transportation services for the movement of passengers and freight are threatened by the cessation or significant curtailment because of the deterioration or inadequacy of rail rights-of-way either earlier acquired for a public purpose, or because of the insufficiency of inadequacy of rail facilities and related equipment, and because of the inability of private railroad companies to provide such* services *or facilities without public financial assistance;

that the public convenience and necessity require that . . . adequate and efficient rail services and facilities be provided in the Commonwealth;

that these needs cannot be met without substantial action by the Commonwealth; and

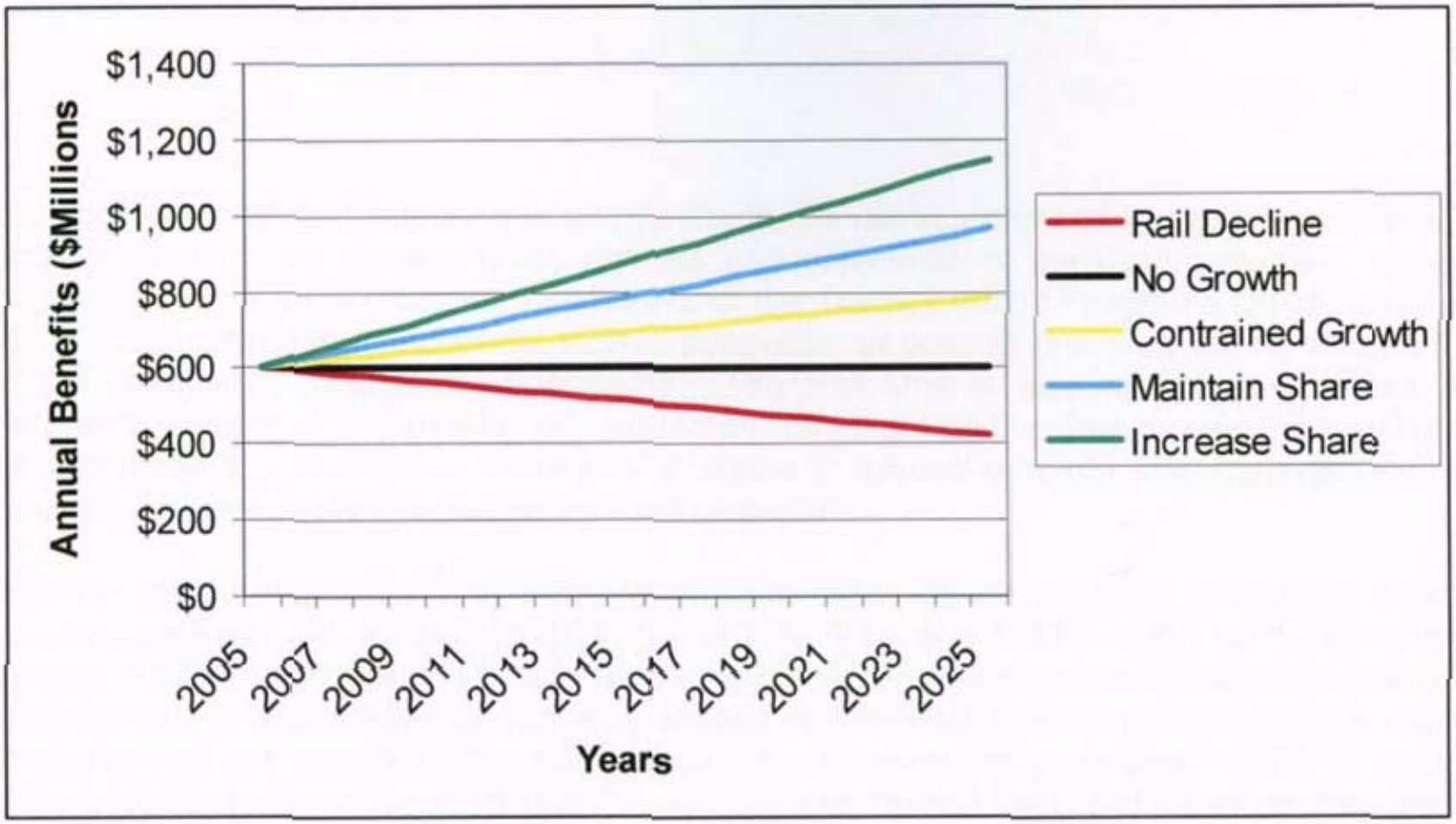
that it is the intent of the General Court to provide for such action through an act which authorizes a public agency to plan for and carry out the steps necessary to acquire, preserve, develop and construct when necessary on lands not formerly owned or used by a railroad, which insures the maintenance and operation of, adequate and efficient rail rights-of-way, related facilities or equipment, and rail services.

Advantages of Freight Rail - Additional Information

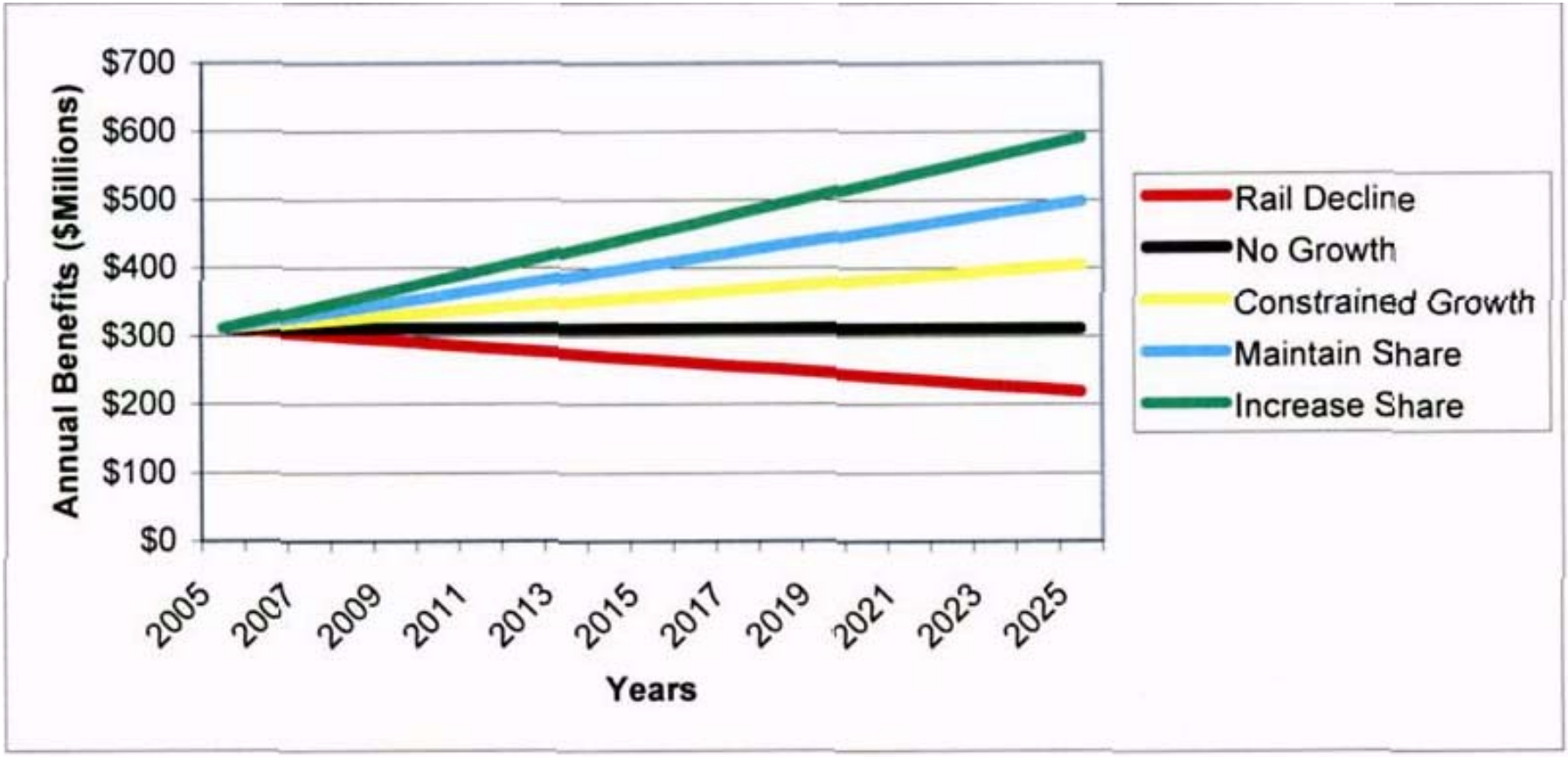
Texas Mobility Report for Boston - Change from 1982 to 1999

- ***Travel Rate Index (TRI) + 145%,*** additional time required to travel at peak periods due to heavy traffic. A Travel Rate Index of 1.2 means that a 10-minute trip at mid-day would take 12 minutes during rush hour.
- ***Travel Time Index (TTI) + 125%,*** additional time required to travel at peak periods due to heavy traffic AND roadway incidents.
- ***Roadway Congestion Index (RCI) + 145%,*** direct comparison of miles traveled with the miles of road available to travel on.
- ***Cost, hours of delay,*** **30 hours** additionally wasted per person per year

Projected Benefits Related to MA Freight Rail Shipments (Including Out-of-State Social Benefits)



Projected Future Benefits from Rail Freight in MA 2005 - 2025



North Atlantic Container Market Shares

Port	2007 TEUs	2007 Rank	Market Share 2007	% Change 2006-2007
Halifax	490,071	22	6%	-7.70%
Montreal	1,363,021	14	16%	5.70%
Boston	220,339	30	3%	10.10%
NY/NJ	5,299,105		62%	4.10%
Philadelphia	253,492	27	3%	2.50%
Wilmington (DE)	284,352	24	3%	8.20%
Baltimore*	610,466	20	7%	-2.80%
TOTALS	8,520,846		100%	

* Baltimore data for Maryland Port Administration (MPA) facilities only

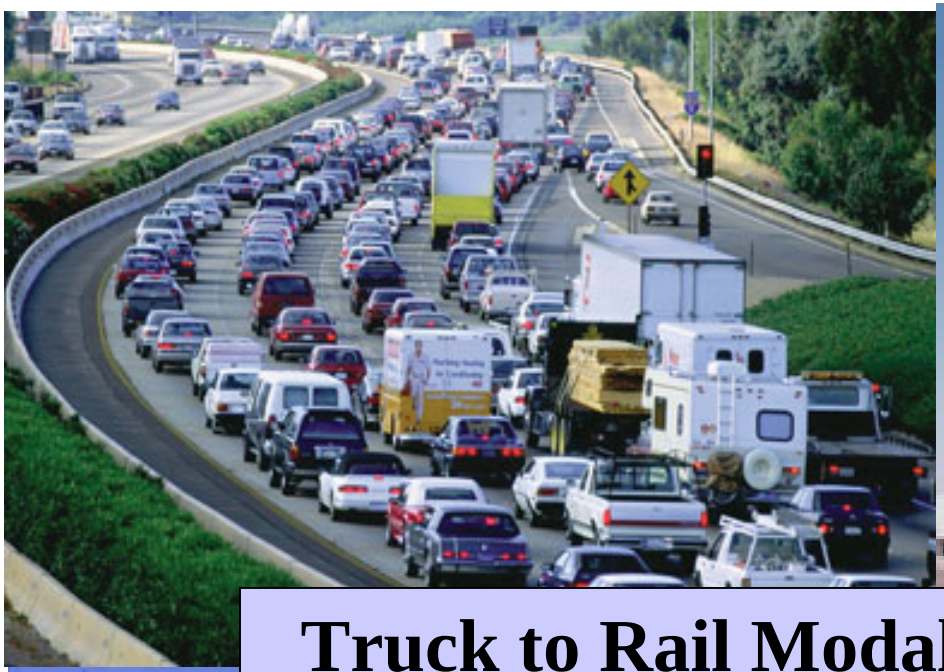
Source: AAPA Survey

Benchmark of Track Maintenance Costs

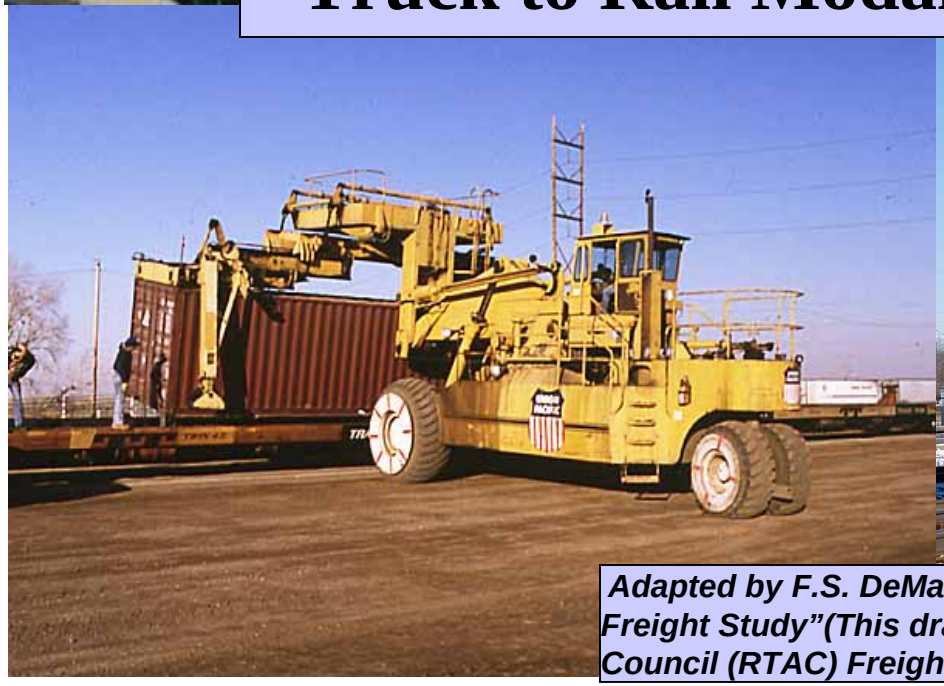
FRA Track Class	Maximum Speed – Freight (mph)	Maximum Speed – Passenger (mph)	Typical Traffic Volume for a Freight Line (MGT[1]/year)	Estimated Annual Expenditures per Track Mile
Excepted	10	Not allowed	<1 Freight only	$6,000
1	10	15	<5 Freight	$12,000
2	25	30	5-10	$18,000
3	40	60	10-20	$27,000
4	60	80	20-40	$45,000
5	80	90	>40	$45,000 +
6	110	110	Not applicable	$45,000 +

Notes:

1. MGT = Million Gross Tons
2. The table also includes estimates of annual track costs for Track Classes 1-4 that were included in the Pennsylvania State Rail Plan ($2003).[1]



Truck to Rail Modal Diversion Analysis



Adapted by F.S. DeMasi from Cambridge Systematics Inc. "Vermont Statewide Freight Study"(This draft intended for Regional Transportation Advisory Council (RTAC) Freight Committee use for discussion and planning purposes)

Truck to Rail Modal Diversion Analysis

It suggested that the Executive Office of Transportation and Public Works EOT perform a truck to rail modal diversion analysis.

Massachusetts has become heavily dependent on freight. The US on average moves over 40% of its freight by rail. Massachusetts' railroads move less than 5 % of its freight.

Rail Freight provides inherent environmental and economic advantages as well as cost avoidances/capital expenditures derived from the use of private ROW in deference to publicly built/maintained ports, roads, and bridges.

Objective:

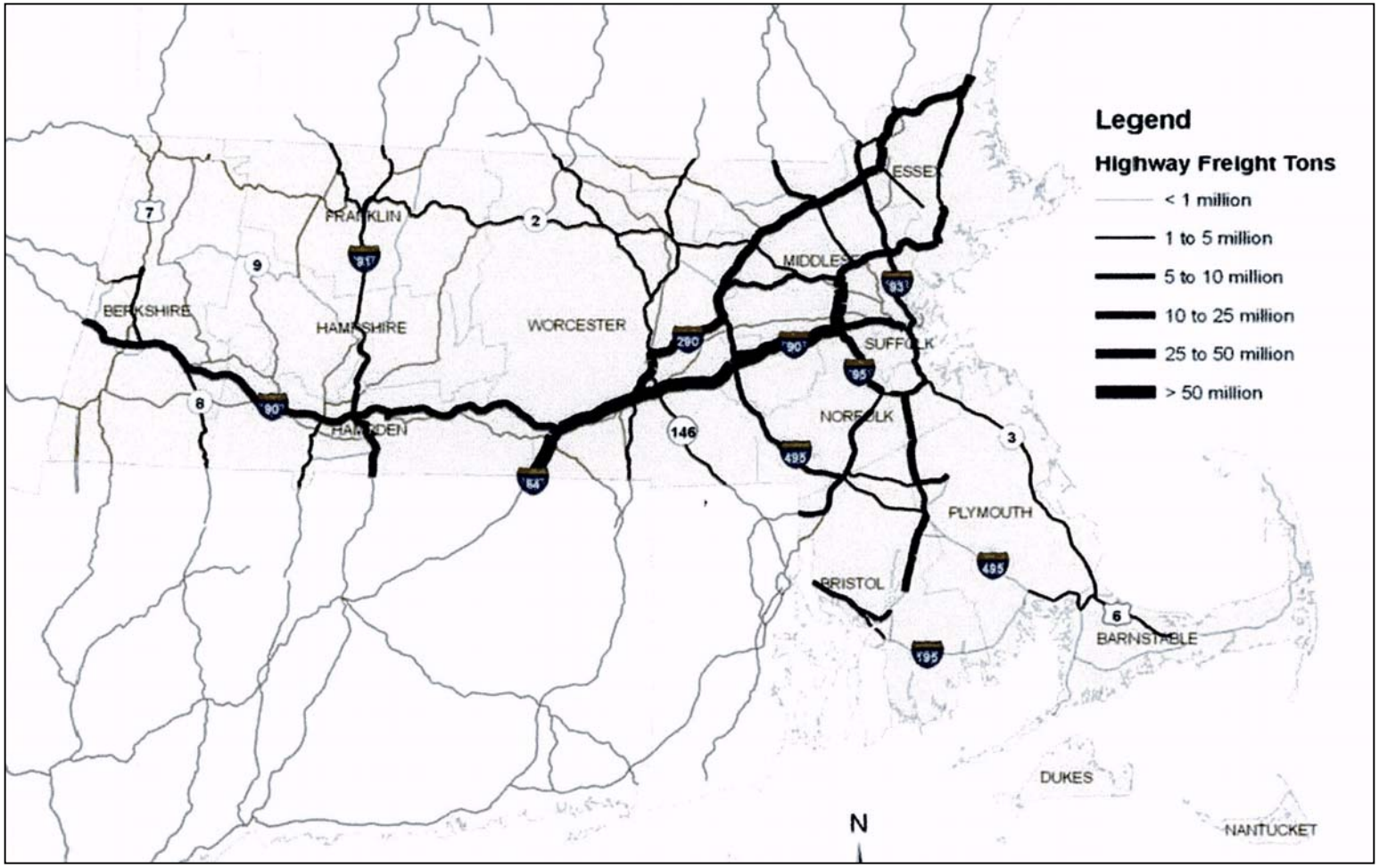
To outline the basic methodology for constructing a modal diversion model for increasing the amount of freight carried on Massachusetts's railroads and to define the data elements required for conducting the detailed analysis.

Infrastructure Impacts of Trucks

Hidden Externality costs of long haul trucking are:

- **Pavement wear/tear**
- **Congestion costs**
- **Accident costs**
- **Excess user costs**
- **Air Quality**
- **Noise impacts**
- **Health/environment impacts**

MassHighway Truck Freight Tons



EOT Freight & Rail Plan

Underutilized Rail seen as an Economic and Environmental Opportunity and alternative for Congestion Management

Advantages of Rail Freight:

- **–Rail energy intensity, is 444 Btu/ton mile, and 3,337 Btu/ton mile for trucks**
- **–The EPA estimates trucks emit 6 to 12 times more pollutant/ton mile than Rail**
- **–Freight rail efficiency has improved 72% since 1980, saving 2.8 billion fewer gallons of fuel in 2003**
- **–A single intermodal train can take 280 trucks off our highways**
- **–Studies have estimated cost of highway traffic congestion in the US is $69.5 Billion, representing a cost of 3.5 billion hours of extra travel time and 5.7 billion gallons of fuel wasted sitting in traffic**

Railroads: a component of remedy for Infrastructure, Environmental, Economic Development Deficiencies

To illustrate railroad's advantages versus tractor-trailer truck compare the full cost of moving freight approximately 750 miles*

These costs are of two types:

- **Direct cost assessed by the freight hauler, rail or truck,**
- **Externality costs imposed by each action.**

External costs include:

- **Congestion imposed on other motorists who suffer additional delay and lost productivity**
- **Accident costs that grow in proportion to travel, much of which is not covered by insurance and environmental damages, both to human health and to the physical environment**

*A comparison of the full cost of moving freight by truck compared to moving freight by rail
By Brian Ketcham, P.E. July 30,2007

Direct Cost to Move Freight*

There is a savings of approximately 67% to 83% for using railroad services for moving freight long distances

The cost to move freight by rail a distance of 750 miles ranges between $2,000 and $4,000 per rail car depending on the commodity moved

At 100 tons per rail car, this works out to between *$20 and $40 per ton by rail*

This compares to approximately $2,400 for a tractor-trailer truck moving 20 tons of freight 750 miles and returning empty, for a cost of *$120 per ton by truck*

*A comparison of the full cost of moving freight by truck compared to moving freight by rail

By Brian Ketcham, P.E. July 30,2007

Truck to Rail Modal Diversion Analysis

Performance measures specifically relevant to freight (e.g., economic development) data sources and measurement methods (e.g., time savings):

- **Congestion mitigation from reduced truck traffic,**
- **Air Quality Improvements,**
- **Reduced Road/Bridge maintenance/replacement costs from trucks**

Effective development/implementation of a modal diversion model requires four key elements:

- **Market definition**
- **Data requirements and collection**
- **Development/application of the diversion model**
- **Application of the model outputs to a network analysis tool**

Data Needs for Truck-to-Rail Modal Diversion Modeling

Definition of Market

- **Origin/destination pairs**
- **Types of commodities**
- **Size of shipment load**

Market

- **Commodity flow data for defined market area**
- **Conversion factors for tons to units calculation (Vehicle Inventory/Use Survey)**

Service Sensitivities

- **Stated-preference survey results for defined market**
- **Consist of data intensive surveys with shippers/receivers that meet market definition**

Alternative Levels of Service

- **Level of service matrices for each defined alternative**
- **Development of new/future service alternatives should be based on private sector expertise, ideally from the transportation service providers**
- **Future alternatives should be based on desired goals/ objectives of transportation policy**

Impacts

- **Truck trip tables for each alternative to model highway impacts and other secondary impacts such as air quality**

Truck to Rail Modal Diversion Analysis

★ Opportunities for modal shift

Top Ten Truck Commodities with an Origin or Destination in MA

Commodity - Total O&D	Truck Tons	% Share
Secondary Traffic	50.87	21%
Petroleum Or Coal Products	39.52	16%
★ Nonmetallic Minerals	38.26	15%
Clay, Concrete, Glass Or Stone	35.13	14%
★ Food Or Kindred Products	24.25	10%
★ Chemicals Or Allied Products	20.17	8%
Primary Metal Products	7.00	3%
Pulp, Paper Or Allied Products	5.01	2%
★ Lumber Or Wood Products	4.76	2%
Fabricated Metal Products	4.59	2%
Total	247.50	93%

Freight & Rail Plan

Top Ten Rail Commodities with an Origin or Destination in MA

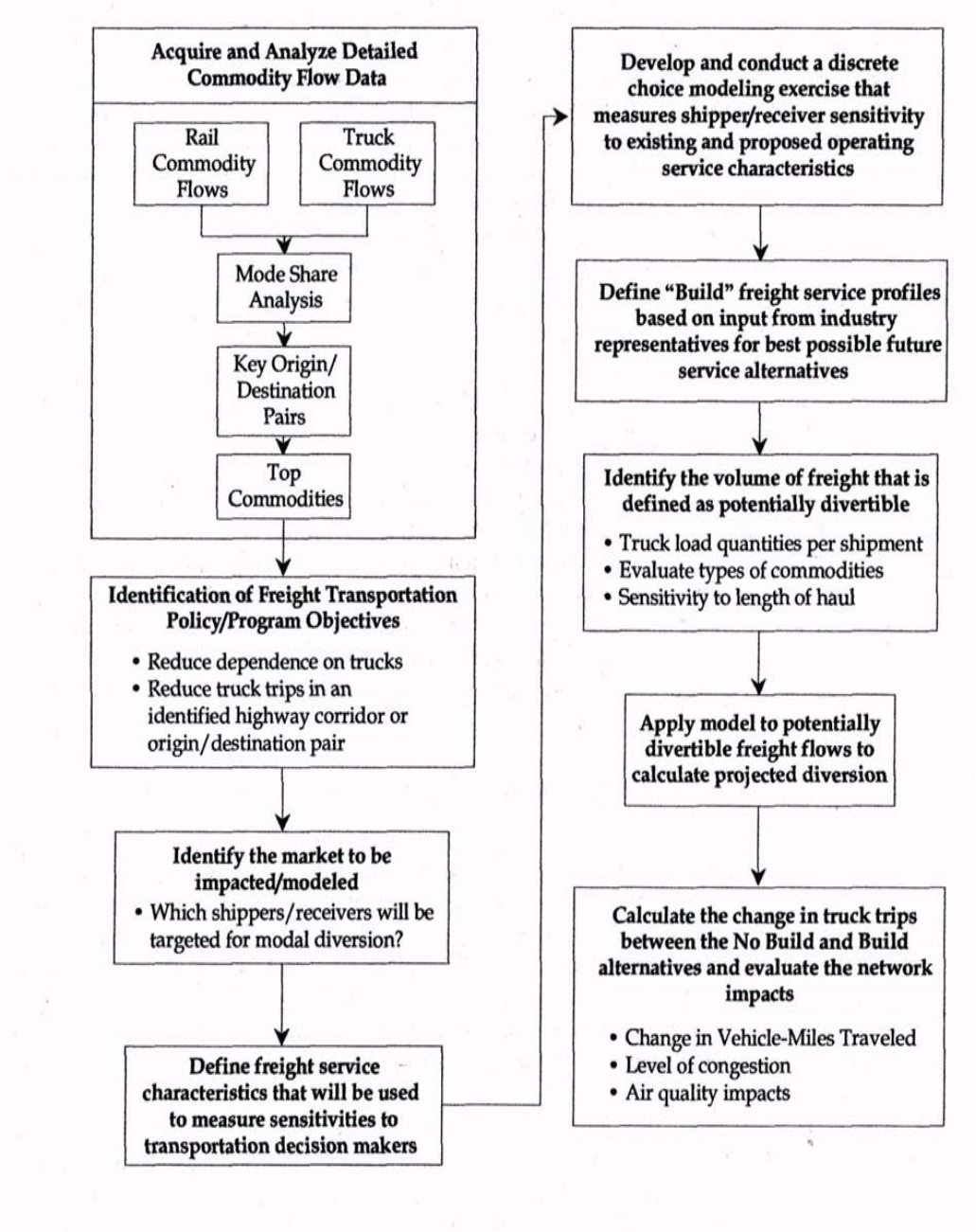
Commodity - Total O&D	Rail Tons	% Share
Misc Mixed Shipments	2.15	19%
★ Chemicals Or Allied Products	1.44	13%
★ Food Or Kindred Products	1.33	12%
Pulp, Paper Or Allie Products	1.21	11%
Farm Products	0.87	8%
Waste Or Scrap Materials	0.82	7%
Transportation Equipment	0.71	6%
★ Nonmetallic Minerals	0.64	6%
Or Stone	0.58	5%
★ Lumber Or Wood Products	0.53	5%
Total	11.23	

Freight & Rail Plan

Note: Though there are 1.3 million tons of coal traveling on MA rail, 1.1 million are through and thereby not reflected

EOT Freight & Rail Plan

TRUCK TO RAIL DIVERSION IMPACT MODEL Development & Application



Truck to Rail Modal Diversion Analysis

The final step/analysis incorporates output data from mode choice model into the travel demand model

Massachusetts truck freight model consisting of truck trip tables is reliable source to assess changes in demand forecasts

The freight model uses the accepted statewide travel demand model developed for all vehicles

This model ensures consistency among planning practices in Mass and facilitating rigorous analyses, such as congestion/air quality impacts

Allows EOTPW to measure impact of the build alternatives as they relate to VMT, levels of congestion (V/C ratios), and secondary impacts such as change in vehicle emissions

EXAMPLES OF RAIL FREIGHT SOLUTIONS

1. ***Enhancement of rail freight capacity and service for intercity corridors*** - e.g., Pennsylvania Double Stack Clearance Project, Virginia 1-81 Marketing Project, Netherlands Betuweroute
2. ***Enhancement of rail capacity and service along urban corridors*** - e.g., California Alameda Corridor Project, Kansas City Sheffield Flyover
3. ***Plans to enhance throughput and capacity of regional rail freight system*** — Vancouver MCTS Plan, Chicago Rail Futures Plan
4. ***Enhancement of rail freight options for service to ports/terminals*** - e.g., State rail access programs and Inland Ports.