Future Mobility in Massachusetts:

Meeting the State's Need for Safe and Efficient Mobility

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Founded in 1971, TRIP ®, of Washington, DC is a nonprofit organization that researches, evaluates and distributes economic and technical data on highway transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway engineering, construction and finance; labor unions; and organizations concerned with an efficient and safe highway transportation network.

Executive Summary

Massachusetts' system of roads and bridges is one of the most heavily traveled in the country, providing the state's 6.4 million residents and its visitors with a high level of mobility. The state's extensive transportation system enables residents and visitors to go to work, visit family and friends, move goods to market, and frequent tourist attractions.

However, the condition of the state's roads, bridges and public transportation system is deteriorating and likely to worsen over time given current funding constraints. Massachusetts faces a significant transportation funding shortfall, which could lead to an increasingly deteriorated and congested transportation system in the future if additional funding is not secured.

This report looks at the condition of the state's roads, bridges and public transportation system, traffic congestion levels, traffic safety rates, and the unmet funding needs of Massachusetts' surface transportation system.

It is critical that Massachusetts develop and maintain a modern highway and transit system that can accommodate future growth in population, economic development and personal and commercial travel. The deficiencies cited in this report are not a reflection of the effectiveness of state and local transportation agencies, but of a lack of adequate funding.

Massachusetts' aging system of roads, highways, bridges and public transit is deteriorated and conditions are likely to worsen and become increasingly congested, impacting the quality of life in the state and impeding its opportunity and ability to compete in the global marketplace. Massachusetts currently lacks adequate funding to maintain its existing transportation system, let alone to provide the improvements needed to relieve traffic congestion, improve safety and foster increased economic development.

- According to a 2007 report by the Massachusetts Transportation Finance Commission, over the next 20 years, Massachusetts will fall between $15 and $19 billion short in maintaining the existing transportation system. This shortfall covers only system preservation and excludes the cost of any needed expansion or necessary improvements to the current system.

- The shortfall calculated by the Transportation Finance Commission includes a $10.5 billion gap in road and bridge funding and a transit funding gap of between $4.8 and $9 billion.

- The Commission's report found that, "the condition of our roads, bridges and transit systems are all in broad decline…we have no money for transit or highway enhancements or expansions without further sacrificing our existing systems and exacerbating our problems."

- Even if the state's large funding gap is closed and the existing system is brought to a state of good repair, Massachusetts' transportation system will still be inadequate to accommodate emerging mobility demands.

- Further compounding Massachusetts' transportation funding shortfall is the escalation of the cost of roadway improvements due to rapid increases in the price of key materials needed for highway and bridge construction. Over the five-year period from April 2003 to April 2008 the average cost of materials used for highway construction, including asphalt, concrete, steel, lumber and diesel, increased by 59 percent.

- Because of a lack of adequate transportation funding in Massachusetts, numerous projects to improve, expand or build new bridges, highways and public transit facilities in the state lack adequate funding to proceed.

- Needed bridge projects in Massachusetts that lack adequate funding to proceed include repairs to the Fore River Bridge in Quincy, the I-95 Bridge over the Merrimack River in Amesbury, and the Wellesley Bridge in Needham.

- Needed highway projects in Massachusetts that lack adequate funding to proceed include the upgrading of metropolitan traffic signals, the expansion of Route 3 between Route 18 and Route 14 and the expansion of portions of Route 24.

- Needed public transit improvements in Massachusetts that lack adequate funding to proceed include construction of Phase 3 of the Silver Line Bus Rapid Transit System in the Boston area, the purchase of new rail vehicles and various physical improvements to the Boston area rail transit system.

- A more extensive list of the state's needed bridge, highway and transit projects that currently lack adequate funding to proceed can be found in the report.

Massachusetts' bridges are aging and increasingly deteriorated. More than half of the state's bridges are structurally deficient or functionally obsolete. This includes all state, local and municipal bridges 20 feet and longer.

- Twelve percent of Massachusetts' bridges are rated as structurally deficient, showing significant deterioration to decks and other major components.

- Forty percent of Massachusetts' bridges are functionally obsolete. These bridges no longer meet modern design standards for safety features such as lane widths or alignment with connecting roads or are no longer adequate for the volume of traffic being carried.

- Thirty-five percent (379 of 1,084) of Interstate bridges in Massachusetts are within one rating point of being considered structurally deficient. If nothing is done to stop the current deterioration rate, these 379 bridges could drop into the structurally deficient category in the next several years.

- Bridge deficiencies have an impact on mobility and safety. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid these bridges. Narrow bridge lanes, inadequate clearances and poorly aligned bridge approaches reduce traffic safety. Redirected trips lengthen travel time, waste fuel and reduce the efficiency of the local economy.

- Massachusetts' bridges are showing their age. Approximately one-third of the state's bridges were built between 1900 and 1950, and 42 percent were built between 1950 and 1970. The typical design life of a bridge is approximately 50 years.

- This report contains a list of Massachusetts most-heavily traveled bridges which are rated structurally deficient. The ten most heavily traveled structurally deficient bridges in the state are:

Rank	City/Town	Route	Feature Intersected	Daily Traffic
1	Lynnfield	Newburyport Turnpike	I 95 /ST128	156,700
2	Lowell	I 495 NB	RR BMRR	130,000
3	Lowell	I 495 SB	RR BMRR	130,000
4	Bedford	HWY PAGE RD	Shawsheen River	123,100
5	Lowell	I 495 SB	Concord River	110,000
6	Boston	I 90 WB	Beacon St.	105,465
7	Boston	I 90 EB	Brooks St.	105,465
8	Boston	I 90 WB	Brooks St.	105,465
9	Newton	I 90	RR CSX/MBTA	105,465
10	Cambridge	Memorial Dr.	Brookline St.	100,000

More than a third of the state's major roads and highways have pavements in poor or fair condition.

- Nine percent of Massachusetts' major roads are rated in poor condition, and an additional 27 percent are in fair condition. This includes Interstates, highways, connecting urban arterials and key urban streets that are maintained by state or local governments.

- Roads rated in poor condition often have significant rutting, potholes or other visible signs of deterioration and typically need to be resurfaced or reconstructed. Roads rated in fair condition may show signs of significant wear and also have some visible pavement distress. Most pavements in fair condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.

- Driving on roads in need of repair costs Massachusetts' motorists $718 million annually – $156 per driver –in extra vehicle operating costs, including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.

- Included in this report is a list of 100 segments of deteriorated roadway in the state that are most in need of repair or replacement. Below are the top ten segments on that list:

RANK	CITY	COUNTY	STREETNAME	FROMSTREET	TOSTREET
1	Westfield	Hampden	NORTH ROAD	HOLYOKE CITY LINE	MONTGOMERY ROAD
2	Norton	Bristol	OLD COLONY ROAD	NORTH WORCESTER STREET	NORTH WORCESTER STREET
3	Ashburnham	Worcester	RINDGE STATE ROAD	ASHBY TOWN LINE	NEW HAMPSHIRE STATE LINE
4	Newton	Middlesex	WASHINGTON STREET	WELLESLEY TOWN LINE	WATERTOWN TOWN LINE
5	Ashburnham	Worcester	RINDGE STATE ROAD	ASHBY TOWN LINE	NEW HAMPSHIRE STATE LINE
6	Essex	Essex	JOHN WISE AVENUE	WESTERN AVENUE	GLOUCESTER CITY LINE
7	Somerset	Bristol	RIVERSIDE AVENUE	DUBLIN STREET	RIVERSIDE AVENUE
8	Bridgewater	Plymouth	PLEASANT STREET	SOUTH STREET	RAYNHAM TOWN LINE
9	Somerset	Bristol	COUNTY STREET	DIGHTON TOWN LINE	RIVERSIDE AVENUE
10	Norton	Bristol	WEST MAIN STREET	TAUNTON AVENUE	NORTH WORCESTER STREET

Massachusetts' transit system is deteriorated and has major deficiencies. Because of inadequate funding for maintenance and expansion the transit system is increasingly in disrepair.

- Approximately 38 percent of Massachusetts Bay Transit Authority (MBTA) buses are in poor or marginal condition and 82 percent of rapid transit rail cars are in poor or marginal condition.

- More than two-thirds (69 percent) of commuter rail locomotives and a total of 84 percent of commuter rail coaches are rated in poor or marginal condition.

- MBTA estimates that nearly one in five miles of rail track need immediate repair.

Massachusetts' major roads and highways are among the busiest in the nation. Increases in population and vehicle travel in Massachusetts have led to additional traffic congestion in the state's urban areas.

- Massachusetts' population increased from 6 million in 1990 to 6.4 million residents in 2007. Massachusetts' population is expected to increase to 6.9 million residents by 2025.

- Vehicle travel on Massachusetts' major highways increased 20 percent between 1990 and 2005, rising from 46.1 billion vehicle miles traveled in 1990 to 55.5 billion vehicle miles traveled in 2005.

- Vehicle travel in the state is expected to increase by 20 percent by 2025.

- The state's major urban and rural roads carry, on average, 66 percent more traffic than the national average. Massachusetts is ranked fifth nationally in terms of daily traffic volume of its major roads, behind only New Jersey, Maryland, Connecticut and Hawaii.

- Twenty-seven percent of Massachusetts' urban Interstates and other highways or freeways are considered congested, carrying a level of traffic that is likely to result in delays during peak travel hours.

- The average rush hour trip in Boston takes approximately 27 percent longer to complete than during non-rush hour. According to a recent report by the Reason Foundation, unless additional highway capacity is added, travel delays in Boston will more than double by 2030, with the average rush hour trip taking 62 percent longer to complete than during non-rush hour.

On average, 454 people were killed each year in crashes on Massachusetts' roads from 2002 to 2006. Improving safety features on Massachusetts' roads and highways would likely result in a decrease in traffic fatalities in the state. Roadway design is an important factor in approximately one-third of fatal and serious traffic accidents.

- A total of 2,269 people were killed in Massachusetts in traffic accidents from 2002 to 2006, an average of 454 fatalities per year.

- Highway improvements such as removing or shielding obstacles, adding or improving medians, adding rumble strips, widening lanes, widening and paving shoulders, upgrading roads from two lanes to four lanes and installing better road markings and traffic signals, where appropriate, can reduce traffic fatalities and accidents while improving traffic flow to help relieve congestion.

- Motor vehicle crashes cost Massachusetts $6.3 billion per year, $988 for each resident, in medical costs, lost productivity, travel delays, workplace costs, insurance costs and legal costs.

- The Federal Highway Administration has found that every $100 million spent on needed highway safety improvements will result in 145 fewer traffic fatalities over a 10-year period.

The efficiency of Massachusetts' transportation system, particularly its highways, is critical to the health of the state's economy. Businesses depend on an efficient and reliable transportation system to move products and services. A key component in business efficiency and success is the level and ease of access to customers, markets, materials and workers.

- Seventy-two percent of the $201 billion in products shipped annually from sites in Massachusetts are transported on highways and another 20 percent are carried by courier services, which use trucks for part of their deliveries. Similarly, 76 percent of the $160 billion in goods shipped annually to sites in Massachusetts are carried by trucks and another 16 percent are carried by courier services, which use trucks for part of their deliveries.

- Commercial trucking in Massachusetts is projected to increase 43 percent by 2020.
- Businesses have responded to improved communications and greater competition by moving from a push-style distribution system, which relies on low-cost movement of bulk commodities and large-scale warehousing, to a pull-style distribution system, which relies on smaller, more strategic and time-sensitive movement of goods.
- Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient transportation system.

Sources of information for this study include the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), the U.S. Census Bureau, the National Highway Traffic Safety Administration (NHTSA), the Texas Transportation Institute (TTI), the Reason Foundation, the Bureau of Transportation Statistics (BTS), the Massachusetts Transportation Finance Commission, the Massachusetts Highway Department and the Massachusetts Bay Transportation Authority.

Introduction

Massachusetts' system of roads and bridges provides the state's 6.4 million residents and its visitors with a high level of mobility. The state's extensive system of roads, bridges and public transportation plays a central role in Massachusetts' economy and enable residents and visitors to go to work, visit family and friends, move goods to market, and frequent tourist attractions.

However, the current level of transportation funding in Massachusetts is vastly inadequate to maintain the state's roads, bridges and transit system and make needed expansions and repairs, leading to increasing deterioration, additional congestion, unaddressed needs and reduced personal and commercial mobility. Because of insufficient transportation funding, the state is unable to fund needed transit or highway enhancements and expansions without sacrificing the maintenance of the existing system

The continued modernization and expansion of Massachusetts' roads, bridges and public transit systems is crucial to providing a safer, more efficient transportation system, while improving the economic livelihood of the state and accommodating future growth. Projects designed to improve traffic and commuting flow and to make driving safer and more efficient ultimately improve a state's level of mobility. As travel on Massachusetts' surface transportation system becomes more efficient, personal and commercial productivity will increase, boosting economic development statewide.

Massachusetts' extensive highway transportation system is maintained by state and local agencies. The deficiencies cited in this report are not a reflection of the effectiveness of state and local transportation agencies, but of a lack of adequate funding.

Population and Travel Trends in Massachusetts

Massachusetts residents enjoy modern lifestyles that rely on a high level of personal and commercial mobility. Increases in both the state's population and the rate of travel of its residents have created a tremendous increase in the demand placed on Massachusetts' transportation system, particularly its key highways and roads. It is critical that Massachusetts develop and maintain a modern transportation system that can accommodate future growth in population, vehicle travel and economic development.

Massachusetts' population reached 6.4 million in 2007, increasing seven percent since 1990, when the state's population was approximately 6 million.[1] Massachusetts' population is expected to increase to 6.9 million by 2025.[2]

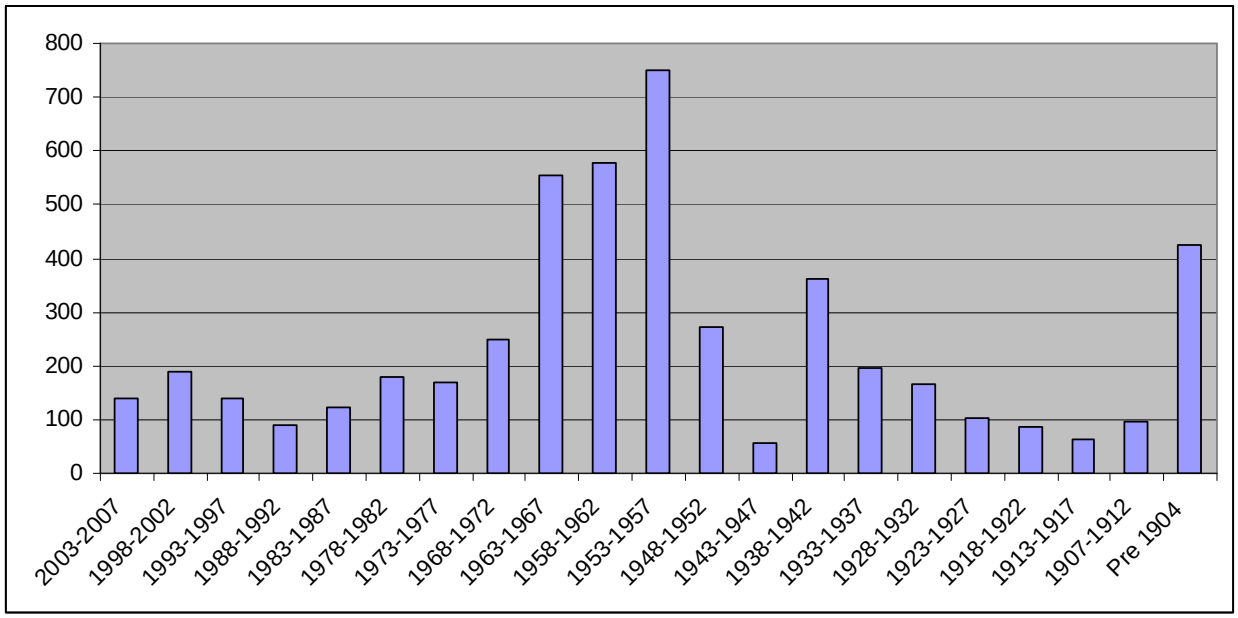
Significant population and economic growth in Massachusetts have resulted in a corresponding increase in vehicle travel in the state. From 1990 to 2005 (the latest year for which data is available), annual vehicle miles of travel (VMT) in Massachusetts increased by 20 percent, from 46.1 billion annual VMT to 55.5 billion VMT.[3] Vehicle travel in Massachusetts is expected to increase by 20 percent by 2025 to approximately 63.8 billion annual VMT.[4]

Bridge Conditions in Massachusetts

Massachusetts' bridges form key links in the state's highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, as well as facilitating commerce and access for emergency vehicles.

However, Massachusetts' bridges are showing their age. Approximately one-third of the state's bridges were built between 1900 and 1950, and 42 percent were built between 1950 and 1970. The typical design life of a bridge is approximately 50 years.[5]

Chart 1: Massachusetts Bridge Age by year.



Source: Federal Highway Administration: National Bridge Inventory

Because of their advancing age, a significant percentage of Massachusetts' bridges are rated structurally deficient or functionally obsolete. In 2007, more than half of Massachusetts' bridges were rated deficient, either because they were structurally deficient or functionally obsolete. Twelve percent of the state's bridges (20 feet or longer) were rated structurally deficient.[6] A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use

alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Approximately 40 percent of Massachusetts' bridges (20 feet or longer) were rated as functionally obsolete in 2007.[7] Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.

Chart 2. Bridge Conditions in Massachusetts

BRIDGE CONDITION	NUMBER OF BRIDGES	PERCENTAGE OF BRIDGES
Structurally Deficient	585	12%
Functionally Obsolete	1,987	40%
Total Deficient Bridges	2,572	
Total Number of Bridges	5,018	

Source: National Bridge Inventory

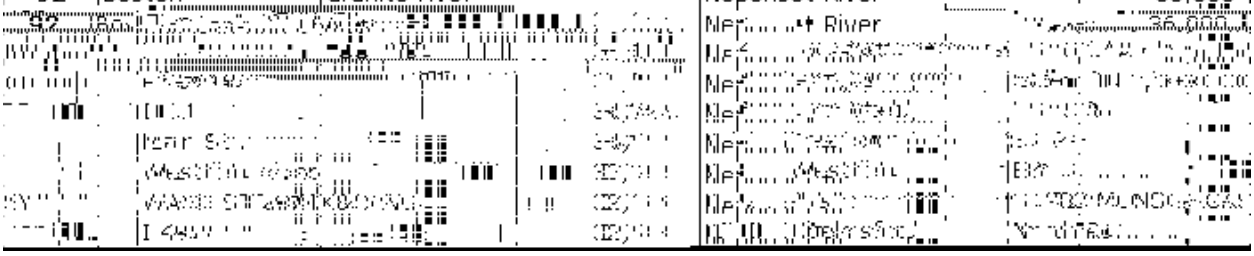
Thirty-five percent (379 of 1,084) of Interstate bridges in Massachusetts are within one rating point of being considered structurally deficient. If nothing is done to stop the current deterioration rate, these 379 bridges could drop into the structurally deficient category in the next several years.

The following is a list of the 100 most heavily traveled bridges in Massachusetts that are rated structurally deficient:

Chart 3. Massachusetts' 100 most heavily traveled, structurally deficient bridges.

Rank	City/Town	Route	Feature Intersected	Daily Traffic
1	Lynnfield	Newburyport Turnpike	I 95 /ST128	156,700
2	Lowell	I 495 NB	RR BMRR	130,000
3	Lowell	I 495 SB	RR BMRR	130,000
4	Bedford	HWY PAGE RD	Shawsheen River	123,100
5	Lowell	I 495 SB	Concord River	110,000
6	Boston	I 90 WB	Beacon St.	105,465
7	Boston	I 90 EB	Brooks St.	105,465
8	Boston	I 90 WB	Brooks St.	105,465
9	Newton	I 90	RR CSX/MBTA	105,465
10	Cambridge	Memorial Dr.	Brookline St.	100,000
11	Hopkinton	I 495 SB	W. Main St.	98,909
12	Worcester	I 290 EB	Mckeon Rd.	98,000
13	Danvers	ST 128	Waters River	97,500
14	Newton	I 90	RR CSX/MBTA	92,541
15	Chelsea	US 1	HWY Arlington & 5TH ST	90,000
16	Chelsea	US 1 S ABT,PR1	HWY ARLINGTON & 5TH ST	90,000
17	Southborough	I 495 NB	Northboro Rd.	90,000
18	Needham	Highland Ave.	I 95 SB/ST 128 SB	89,400
19	Concord	Concord Turnpike	Sudbury River	89,100
20	Wellesley	I 95 NB/ST128 NB	Worcester St.	86,000
21	Chelsea	US 1	Spruce St.	83,000
22	Hanover	NB Pilgrim Highway	Webster St.	82,000
23	Amesbury	I 95	Merrimack River	80,000
24	Hopkinton	I 495 NB	W. Main St.	77,000
34	Everett	[illegible]	[illegible]	[illegible]
35	Westborough	I 90 EB	[illegible]	[illegible]
36	Westborough	I 90 WB	[illegible]	[illegible]
37	Westborough	I 90 EB	[illegible]	[illegible]
38	Westborough	I 90 WB	[illegible]	[illegible]
39	Boston	I 90 WB	[illegible]	[illegible]
40	Rockland	SB Pilgrim Highway	[illegible]	[illegible]
41	Boston	I 90 EB	[illegible]	[illegible]
42	Framingham	Worcester Rd.	[illegible]	[illegible]
43	Boston	ST 28	[illegible]	[illegible]
44	Dedham	Providence Highway	[illegible]	[illegible]
45	Boston	ST/RRW DR WB	[illegible]	[illegible]
46	Dedham	Providence Highway	[illegible]	[illegible]
47	Gloucester	ST 128	[illegible]	[illegible]
48	Auburn	I 90 EB	[illegible]	[illegible]
49	Auburn	I 90 WB	[illegible]	[illegible]
50	Haverhill	Bridge St.	[illegible]	[illegible]

Rank	City/Town	Route	Feature Intersected	Daily Traffic
51	Amesbury	I 495 NB	RR BMRR (ABANDONED)	55,100
52	Boston	Morrissey Boulevard	Patton Cove	54,000
53	Norwell	ST 3 NB	High St.	53,000
54	Weston	I 90 RAMPS J & L	MDC Aqueduct	52,911
55	Framingham	ST 9 /ST 30/	Sudbury River	52,200
56	Boston	Alford St.	Mystic River	52,000
57	Dartmouth	FNCE CRNR RD	I 195	52,000
58	Somerville	Mcgrath Highway	Gilman St.	50,000
59	Seekonk	ST 114 A	I 195	49,700
60	Boston	Cambridge St.	ST 3 & Charles River	49,500
61	Boston	ST 28 CHAS R DM RD	Charles River	49,500
62	Fall River	Brightman St.	Taunton River	49,000
63	West Bridgewater	W. Center St.,	Hockomock River	49,000
64	Hanover	Washington St.	Pilgrim Highway	48,800
65	Lowell	ST 110 / ST 38	Merrimack River	48,000
66	Attleboro	Newport Ave.	RR AMTRAK/MBTA	47,400
67	Shrewsbury	Belmont St.	Lake Quinsigamond	45,200
68	Boston	American Legion Highway	Morton St.	45,000
69	Boston	Morrissey Blvd.	Mt. Vernon St.	44,300
70	Revere	REV BCH PKWY	RR MBTA/BMRR	44,000
71	Haverhill	Bridge St.	Merrimack River	43,200
72	Lexington	ST 2 EB	I 95 /ST128	42,000
73	Medford	Main St.	Mystic River	42,000
74	Newton	Service Rd.	Charles River	42,000
75	Duxbury	Pilgrim Highway	Franklin St.	41,700
76	Salem	North St.	North River	41,500
77	Boston	Morton St.	RR MBTA	41,300
78	Revere	Broadway	Diamond Creek	41,100
79	Boston	Brookline St.	SOL FLD RD & river	41,000
80	Boston	Chelsea St.	Chelsea River	40,400
81	Harvard	I 495 SB	Stow Rd.	40,000
82	New Bedford	I 195 EB	ST140	40,000
83	Hudson	Washington St.	Assabet River	39,200
84	Leominster	N. Main St.	ST 2	39,000
85	Boston	N. Washington St.	Charles River	38,400
86	Framingham	Main St.	Worcester Rd.	38,300
87	Dennis	ST 134	US 6 WB/Mid Cape Highway	37,800
88	Revere	Salem Turnpike	Water Pines River	37,400
89	New Bedford	I 195 WB	ST140	37,000
90	Quincy	Hancock St.	SGMRE ST&MBTA&REDS	36,500
91	Dennis	Main St.	Swan Pond River	36,100
92	Boston	Granite Ave.	Neponset River	36,000



Source: MassHighways

Condition of Massachusetts' Roads

The life cycle of Massachusetts' roads is greatly affected by the state's ability to perform timely maintenance and upgrades to ensure that structures last as long as possible. The pavement condition of the state's major roads are evaluated and classified as being in poor, mediocre, fair or good condition.

Pavement failure is caused by a combination of traffic, moisture and climate. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.[8]

In 2007, nine percent of Massachusetts' major roads were rated in poor condition and an additional 27 percent were in fair condition.[9] Roads rated in poor condition often have significant rutting, potholes or other visible signs of deterioration. Roads in poor condition typically need to be resurfaced or reconstructed. Roads rated in fair condition often show signs of significant wear and may also have some visible pavement distress. Most pavements in fair condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.

Driving on roads in need of repair costs Massachusetts' motorists $718 million – $156 per driver – annually in extra vehicle operating costs, including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear. Additional vehicle operating costs have been calculated in the Highway Development and Management Model (HDM), which is recognized by the U.S. Department of Transportation and more than 100 other

countries as the definitive analysis of the impact of road conditions on vehicle operating costs. The HDM report is based on numerous studies that have measured the impact of various factors, including road conditions, on vehicle operating costs.[10]

The HDM study found that road deterioration increases ownership, repair, fuel and tire costs. The report found that deteriorated roads accelerate the pace of depreciation of vehicles and the need for repairs because the stress on the vehicle increases in proportion to the level of roughness of the pavement surface. Similarly, tire wear and fuel consumption increase as roads deteriorate since there is less efficient transfer of power to the drive train and additional friction between the road and the tires.

TRIP's additional vehicle operating cost estimate is based on taking the average number of miles driven annually by a region's driver, calculating current vehicle operating costs based on AAA's vehicle operating cost estimates and then using the HDM model to estimate the additional vehicle operating costs being paid by drivers as a result of substandard roads.[11] Additional research on the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored into the TRIP vehicle operating cost methodology.

Following is a list of 100 segments of deteriorated roadway in the state that are most in need of repair or replacement:

Chart 4: Massachusetts roadways most in need or repair or replacement:

RANK	CITY	COUNTY	STREETNAME	FROMSTREET	TOSTREET	AADT
1	Westfield	Hampden	NORTH ROAD	HOLYOKE CITY LINE	MONTGOMERY ROAD	12,941
2	Norton	Bristol	OLD COLONY ROAD	NORTH WORCESTER STREET	NORTH WORCESTER STREET	15,000
3	Ashburnham	Worcester	RINDGE STATE ROAD	ASHBY TOWN LINE	NEW HAMPSHIRE STATE LINE	14,200
4	Newton	Middlesex	WASHINGTON STREET	WELLESLEY TOWN LINE	WATERTOWN TOWN LINE	36,300
5	Ashburnham	Worcester	RINDGE STATE ROAD	ASHBY TOWN LINE	NEW HAMPSHIRE STATE LINE	14,200
6	Essex	Essex	JOHN WISE AVENUE	WESTERN AVENUE	GLOUCESTER CITY LINE	11,600
7	Somerset	Bristol	RIVERSIDE AVENUE	DUBLIN STREET	RIVERSIDE AVENUE	20,224
8	Bridgewater	Plymouth	PLEASANT STREET	SOUTH STREET	RAYNHAM TOWN LINE	12,538
9	Somerset	Bristol	COUNTY STREET	DIGHTON TOWN LINE	RIVERSIDE AVENUE	9,580
10	Norton	Bristol	WEST MAIN STREET	TAUNTON AVENUE	NORTH WORCESTER STREET	15,000
11	Southboro	Worcester	MAIN STREET	EAST MAIN STREET	WESTBOROUGH TOWN LINE	19,500
12	Taunton	Bristol	SOMERSET AVENUE	WEIR STREET	DIGHTON TOWN LINE	17,656
13	Lowell	Middlesex	ANDOVER STREET	CHURCH STREET	ANDOVER TOWN LINE	21,300
14	Beverly	Essex	CABOT STREET	WENHAM TOWN LINE	WENHAM TOWN LINE	17,100
15	Tolland	Hampden	WEST GRANVILLE ROAD	GRANVILLE TOWN LINE	CLUBHOUSE ROAD	9,500
16	New Bedford	Bristol	SAWYER STREET	MOUNT PLEASANT STREET	COGGESHALL STREET	39,400
17	Templeton	Worcester	KING PHILLIPS TRAIL	PATRIOTS ROAD	WINCHENDON TOWN LINE	10,415
18	Chelsea	Suffolk	TOBIN BRIDGE	BOSTON CITY LINE	REVERE CITY LINE	83,600
19	Attleboro	Bristol	HIGHLAND AVENUE	RHODE ISLAND STATE LINE	?	11,497
20	Mansfield	Bristol	EASTMAN STREET	EAST STREET	MANSFIELD TOWN LINE	12,648
21	Worcester	Worcester	LINCOLN STREET	SHREWSBURY TOWN LINE	BOYLSTON TOWN LINE	6,400
22	Newton	Middlesex	WATERTOWN STREET	WASHINGTON STREET	NEWTON CITY LINE	36,300
23	Mansfield	Bristol	CHAUNCY STREET	FOXBOROUGH TOWN LINE	OAKLAND STREET	18,613
24	Bernadston	Franklin	BRATTLEBORO ROAD	CHURCH STREET	VERMONT STATE LINE	8,539
25	Ashby	Middlesex	WEST MAIN STREET	ASHBURNHAM TOWN LINE	TOWNSEND ROAD	14,200
26	New Bedford	Bristol	ACUSHNET AVENUE	FREETOWN TOWN LINE	COGGESHALL STREET	39,400
27	Milford	Worcester	MAIN STREET	HOPEDALE TOWN LINE	BEACH STREET	26,200
28	Braintree	Norfolk	QUINCY AVENUE	COMMERCIAL STREET	FURNACE BROOK PARKWAY	23,858
29	Ipswich	Essex	ESSEX ROAD	COUNTY ROAD	IPSWICH TOWN LINE	11,600
30	Arlington	Middlesex	MASSACHUSETTS AVENUE	LEXINGTON TOWN LINE	MASSACHUSETTS AVENUE	155,000
31	Bernadston	Franklin	BRATTLEBORO ROAD	CHURCH STREET	VERMONT STATE LINE	8,539
32	Worcester	Worcester	GOLD STAR BOULEVARD	GROVE STREET	GROVE STREET	16,200
33	Foxborough	Norfolk	GREEN STREET	MANSFIELD TOWN LINE	SOUTH STREET	10,900
34	Haverhill	Essex	AMESBURY ROAD	KENOZA AVENUE	WEST MAIN STREET	6,608
35	Amesbury	Essex	HAVERHILL ROAD	MAIN STREET	MAIN STREET	14,594
36	Webster	Worcester	DOUGLAS ROAD	DOUGLAS TOWN LINE	SOUTHWEST MAIN STREET	6,000
37	Bedford	Middlesex	BROOKSBIE ROAD	PAGE ROAD	BURLINGTON TOWN LINE	14,167
38	Malden	Middlesex	CENTRE STREET	PLEASANT STREET	EASTERN AVENUE	37,295
39	Methuen	Essex	BROADWAY STREET	HAVERHILL CITY LINE	METHUEN TOWN LINE	48,900
40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	Fitchburg	Worcester	ASHBY STATE ROAD	PAGE ROAD	ASHBY TOWN LINE	[illegible]
48	Framingham	Middlesex	OLD CONN ATE ROAD	NATICK TOWN LINE	WAYLAND TOWN LINE	11,000
49	West Springfield	Hampden	RIVERDALE STREET	AGAWAM TOWN LINE	HOLYOKE CITY LINE	31,700
50	Charlton	Worcester	NEW SPENCER ROAD	SOUTH STURBRIDGE ROAD	CHARLTON TOWN LINE	9,195
51	Spencer	Worcester	CHARLTON ROAD	MAPLE STREET	MEADOW ROAD	8,965
52	Townsend	Middlesex	MAIN STREET	ASHBY TOWN LINE	GROTON TOWN LINE	14,200
53	Holbrook	Norfolk	UNION STREET	NORTH FRANKLIN STREET	PLYMOUTH STREET	17,274
54	Southboro	Worcester	BOSTON ROAD	EAST MAIN STREET	FRAMINGHAM TOWN LINE	19,500
55	West Boylston	Worcester	TEMPLE STREET	BOYLSTON TOWN LINE	WORCESTER STREET	8,524
56	Halifax	Plymouth	MONPONSETT STREET	HANSON TOWN LINE	PLYMPTON TOWN LINE	8,124
57	Tolland	Hampden	WEST GRANVILLE ROAD	GRANVILLE TOWN LINE	TOLLAND TOWN LINE	9,500
58	Hanover	Plymouth	WASHINGTON STREET	PEMBROKE TOWN LINE	HANOVER TOWN LINE	20,300
59	Kingston	Plymouth	MAIN STREET	PLYMOUTH TOWN LINE	DUXBURY TOWN LINE	20,060
60	Lincoln	Middlesex	CONCORD ROAD	WAYLAND TOWN LINE	CONCORD TOWN LINE	7,126
61	Amesbury	Essex	MACY STREET	SALISBURY TOWN LINE	AMESBURY TOWN LINE	17,281
62	Lincoln	Middlesex	SOUTH GREAT ROAD	WESTON TOWN LINE	CONCORD TOWN LINE	13,152
63	Tewksbury	Middlesex	MAIN STREET	WILMINGTON TOWN LINE	LOWELL CITY LINE	23,600
64	Hanover	Plymouth	WEBSTER STREET	NORWELL TOWN LINE	SCITUATE TOWN LINE	13,300

66	Newton	Middlesex	COMMONWEALTH AVENUE	WESTON TOWN LINE	NEWTON CITY LINE	20,384
67	Gardner	Worcester	ROUTE 140	WESTMINSTER TOWN LINE	GREEN STREET	7,820
68	Wilmington	Middlesex	MAIN STREET	TEWKSBURY TOWN LINE	WOBURN CITY LINE	14,100
69	Lynnfield	Essex	NEWBURYPORT TURNPIKE	PEABODY CITY LINE	DANVERS TOWN LINE	21,093
70	Cambridge	Middlesex	FRESH POND PARKWAY	CONCORD AVENUE	SOMERVILLE CITY LINE	155,000
71	Billerica	Middlesex	SALEM ROAD	ANDOVER ROAD	ANDOVER ROAD	24,500
72	Weston	Middlesex	SOUTH AVENUE	NATICK TOWN LINE	BOSTON CITY LINE	10,000
73	Attleboro	Bristol	WASHINGTON STREET	RHODE ISLAND STATE LINE	RICHARDS AVENUE	20,768
74	Haverhill	Essex	WATER STREET	KEELEY STREET	LAFAYETTE SQUARE	16,100
75	Gloucester	Essex	YANKEE DIVISION HIGHWAY	ESSEX TOWN LINE	WENHAM TOWN LINE	64,000
76	Sturbridge	Worcester	SOUTHBRIDGE ROAD	SOUTHBRIDGE TOWN LINE	MAIN STREET	16,100
77	Woburn	Middlesex	MAIN STREET	WINCHESTER TOWN LINE	MAIN STREET CIRCLE	18,900
78	Pepperell	Middlesex	RIVER ROAD	SOUTH STREET	NEW HAMPSHIRE STATE LINE	14,200
79	Leominster	Worcester	CENTRAL STREET	STERLING TOWN LINE	FITCHBURG CITY LINE	15,613
80	Berlin	Worcester	WEST STREET	CLINTON TOWN LINE	HUDSON TOWN LINE	8,100
81	Merrimac	Essex	EAST MAIN STREET	AMESBURY TOWN LINE	MERRIMAC TOWN LINE	7,096
82	Gill	Franklin	FRENCH KING HIGHWAY	ERVING TOWN LINE	GREENFIELD TOWN LINE	12,700
83	Tolland	Hampden	NEW BOSTON ROAD	SANDISFIELD TOWN LINE	CLUBHOUSE ROAD	9,500
84	Beverly	Essex	ESSEX STREET	CHURCH STREET	WENHAM TOWN LINE	17,100
85	Malden	Middlesex	EASTERN AVENUE	MAIN STREET	ALBERT J BROWN CIRCLE	46,300
86	Methuen	Essex	HAVERHILL STREET	LOWELL STREET	METHUEN TOWN LINE	17,652
87	Auburn	Worcester	SOUTHBRIDGE STREET	WORCESTER CITY LINE	OXFORD TOWN LINE	31,000
88	Lawrence	Essex	WINTHROP AVENUE	NORTH ANDOVER TOWN LINE	LAWRENCE CITY LINE	22,355
89	Agawam	Hampden	SOUTHWICK STREET	NORTH WESTFIELD STREET	CONNECTICUT STATE LINE	15,700
90	Plainville	Norfolk	EAST BACON STREET	SOUTH STREET	MESSENGER STREET	7,800
91	Arlington	Middlesex	CONCORD TURNPIKE	BELMONT TOWN LINE	LEXINGTON TOWN LINE	74,781
92	Harvard	Worcester	CONCORD TURNPIKE	LITTLETON TOWN LINE	LANCASTER TOWN LINE	43,870
93	Chicopee	Hampden	CENTER STREET	SPRINGFIELD CITY LINE	GRANBY ROAD	10,407
94	Lawrence	Essex	JACKSON STREET	CANAL STREET	LAWRENCE CITY LINE	18,521
95	Cambridge	Middlesex	MEMORIAL DRIVE	MAIN STREET	MOUNT AUBURN STREET	155,000
96	Worcester	Worcester	MAJOR TAYLOR BOULEVAR	LINCOLN SQUARE	LINCOLN SQUARE	6,400
97	Franklin	Norfolk	EAST CENTRAL STREET	WRENTHAM TOWN LINE	MAIN STREET	13,500
98	Lynn	Essex	LYNNFIELD STREET	BROADWAY	SAUGUS TOWN LINE	30,000
99	New Marlboro	Berkshire	HARTSVILLE ROAD	MONTEREY TOWN LINE	SANDISFIELD TOWN LINE	9,500
100	Hadley	Hampshire	RUSSELL STREET	NORTHAMPTON CITY LINE	AMHERST TOWN LINE	28,800

Source: Massachusetts Department of Transportation

Public Transportation in Massachusetts

The extensive Massachusetts Bay Transportation Authority (MBTA) provides service in the Boston area to 1.1 million daily passengers using a combination of bus, rapid transit, bus rapid transit, light rail streetcars, trackless trolleys, commuter rail, ferries, and paratransit vehicles. The MBTA's extensive infrastructure includes over 2,500 vehicles, 275 stations, more than 800 miles of tracks, 496 bridges and 21 miles of tunnels, and 19 maintenance shops.[12]

The extensive size and advancing age of the MBTA system have created significant funding needs over the years. However, capital spending on the MBTA's infrastructure has not kept pace with growing needs, leading to increasing deterioration to the transit system. Because

of inadequate funding for maintenance and expansion, the components of the transit system are increasingly in disrepair. The condition of the system components are rated on a scale of 1-5, with a condition rating of 1 being the worst and 5 being the best. Below is a description of the numerical condition ratings.

Chart 5. MBTA rating key and description.

Condition	Rating	Description
1	**Poor**	Seriously damaged components in need of immediate repair
2	**Marginal**	Defective or deteriorated components in need of replacement
3	**Fair**	Moderately defective or deteriorated components
4	**Good**	Some slightly defective or deteriorated components
5	**Excellent**	No visible defects, near new condition

Source: Federal Transit Administration guidelines.

According to the MBTA, approximately 38 percent of buses are in poor or marginal condition, while 82 percent of rapid transit rail cars are in poor or marginal condition. More than two-thirds of commuter rail locomotives are given a rating of 1 or 2, and a total of 84 percent of commuter rail coaches are in poor or marginal condition. MBTA estimates that nearly one in five miles of rail track have seriously damaged components and need immediate repair. The chart below details the condition of buses, rail cars, tracks and tunnels maintained by the MBTA.

Chart 6. Condition of MBTA busses, rail cars, tracks and tunnels.

CONDITION	Poor 1		Marginal 2		Fair 3		Good 4		Excellent 5		Total
Number of buses	5	1%	371	37%	65	7%	300	30%	252	25%	993
Number of rail cars (rapid transit)	74	12%	428	70%	28	5%	40	7%	45	7%	615
Number of commuter rail locomotives	18	23%	37	46%	25	31%	0	0%	0	0%	80
Number of commuter rail coaches	57	14%	288	70%	32	8%	23	6%	10	2%	410
Miles of rail track	160	19%	160	19%	160	19%	160	19%	183	22%	823
Miles of tunnels	0	0%	10	48%	11	52%	0	0%	0	0%	21

Source: MBTA response to TRIP survey.

Traffic Congestion in Massachusetts

Traffic congestion in Massachusetts is a growing burden in key urban areas and threatens to impede the state's economic development. Congestion on Massachusetts' urban highways is growing as a result of increases in vehicle travel and population, without a corresponding increase in highway capacity or efficiency.

The state's major urban and rural roads carry, on average, 66 percent more traffic than the national average and the state is ranked fifth nationally in terms of daily traffic volume of its major roads, behind only New Jersey, Maryland, Connecticut and Hawaii.

In 2006, the latest year for which data is available, 27 percent of Massachusetts' urban highways were congested, carrying traffic volumes that result in significant rush hour delays.[13] Highways that carry high levels of traffic are also more vulnerable to experiencing significant traffic delays as a result of traffic accidents or other incidents.

The average rush hour trip in Boston takes approximately 27 percent longer to complete than during non-rush hour. According to a recent report by the Reason Foundation, unless additional highway capacity is added, travel delays in Boston will more than double by 2030, with the average rush hour trip taking 62 percent longer to complete than during non-rush hour.[14]

Traffic Safety in Massachusetts

On average, 454 people were killed each year in motor vehicle accidents in Massachusetts from 2002 through 2006, according to the National Highway Transportation Safety Administration.[15]

Chart 7. Traffic fatalities in Massachusetts from 2001 – 2005

Year	Fatalities
2002	459
2003	462
2004	476
2005	442
2006	430

Source: National Highway Traffic Safety Administration.

Motor vehicle crashes cost Massachusetts $6.3 billion per year, $988 for each resident, in medical costs, lost productivity, travel delays, workplace costs, insurance costs and legal costs.

The three major factors associated with fatal vehicle accidents are: driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is an important factor in one-third of fatal and serious traffic accidents. Improving safety on Massachusetts' roads and highway system can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and a variety of improvements in roadway safety features.

Roadway improvements such as adding turn lanes, removing or shielding obstacles, adding or improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals, where appropriate, could reduce the severity and occurrences of serious traffic crashes. The Federal Highway Administration has found that every $100 million spent on needed highway safety improvements will result in 145 fewer traffic fatalities over a 10-year period.[16]

Roads with poor geometry, insufficient clear distances, without turn lanes, inadequate

Businesses have responded to improved communications and the greater necessity to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and by accepting customer orders through the Internet. The result of these changes has been a significant improvement in logistics efficiency as businesses move away from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in Massachusetts. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to market to meet this demand, a process that adds to truck traffic on the state's highways and major arterial roads. An analysis of commodity transport by the U.S. Bureau of Transportation Statistics (BTS) and the U.S. Census Bureau underscored the economic importance of Massachusetts' road system. The BTS report found that 72 percent of the $201 billion in products shipped annually from sites in Massachusetts are transported on highways and another 20 percent are carried by courier services, which use trucks for part of their deliveries.[18] Similarly, 76 percent of the $160 billion in goods shipped annually to sites in Massachusetts are carried by trucks and another 16 percent are carried by courier services, which use trucks for part of their deliveries.[19]

Trucking is a crucial part of Massachusetts' economy, as commercial trucks move goods from sites across the state to markets inside and outside the state. Commercial truck travel in Massachusetts is expected to increase significantly over the next two decades. Based on federal

projections, TRIP estimates that commercial trucking will increase by 43 percent in Massachusetts by 2020.[20]

Transportation Funding in Massachusetts

Transportation funding in Massachusetts is inadequate to maintain the current system and make needed expansions and repairs, leading to increasing deterioration and unaddressed needs. The state has been able to make short-term fixes to its transportation system, but insufficient funding has precluded long-term solutions and needed system expansion. Because of current budget limitations, the state is unable to fund needed transit or highway enhancements and expansions without sacrificing the maintenance of the existing system.[21]

According to the Massachusetts Transportation Finance Commission, over the next 20 years, the cost to maintain Massachusetts' transportation system is $15 to $19 billion higher than the anticipated resources available.[22] This is simply the cost to maintain the system, and does not address necessary enhancements or needed expansions.

The shortfall calculated by the Transportation Finance Commission includes a $10.5 billion gap in road and bridge funding, and a transit funding gap of between $4.8 and $9 billion. Even if the state's large funding gap is closed and the existing system is brought to a state of good repair, Massachusetts' transportation system will still be inadequate to accommodate emerging mobility demands.

The Commission's report found that, "the condition of our roads, bridges and transit systems are all in broad decline…we have no money for transit or highway enhancements or expansions without further sacrificing our existing systems and exacerbating our problems".

Further compounding Massachusetts' transportation funding shortfall is the escalation of the cost of roadway improvements due to rapid increases in the price of key materials needed for highway and bridge construction. Over the five-year period from April 2003 to April 2008 the average cost of materials used for highway construction, including asphalt, concrete, steel, lumber and diesel increased by 59 percent.[23]

As a result of inadequate transportation funding in Massachusetts, numerous projects to repair, expand or build critical bridges, highways and transit systems in the state lack adequate funding to proceed. Based on information from the Massachusetts Transportation Finance Commission and the MBTA, TRIP has compiled the following lists of key, needed roadway improvements in the state that are currently unfunded.

Chart 9. Needed Highway and Bridge Improvements in Massachusetts that lack adequate funding to proceed.

Type of facility	Describe Improvement Needed	Estimated Cost (Millions)
Highway	Upgrade Metropolitan Traffic Signals	260
Highway	Route 3 Capacity Enhancement (Route 18 to Route 14	200
Bridge	Fore River Bridge (Quincy/Weymouth)	160
Bridge	1-95 bridge over Merrimack River (Amesbury-Newburyport)	132
Tunnel	Storrow Drive Tunnel	120
Highway	Route 24 Capacity Enhancement	115
Highway	I-93 Improvements (Andover)	106
Highway	Revere Beach Parkway (Everett, Revere, Medford)	80
Highway	Rutherford Avenue Improvements - Boston	68
Highway	Route 128 Capacity Enhancments (Beverly-Peabody)	60
Bridge	Needham - Wellesley Bridge	55
Bridge	Route 9 Bridge (Shrewsbury)	50
Highway	I-93/Mystic Avenue Interchange (Somerville)	50
Highway	Route 126/Route 135 Interchange (Framington)	50
Highway	Route 128 Improvements (Lynnfield-Reading)	50
Bridge	Route 113 Merrimack River Bridge	45
Highway	I-93 and I495 Interchange (Andover)	41
Highway	Route 1/114 Corridor Improvements (Danvers-Peabody)	40
Bridge	Beach Road Bridge	30
Highway	Bourne Rotary Improvements	30
Bridge	Route 12 Bridge (Leominster)	25
Bridge	Route 116 Bridge (Chicopee)	24
Bridge	I-95 bridge (Lexington)	21

Source: Massachusetts Transportation Finance Commission

Based on information from the Massachusetts Transportation Finance Commission and the MBTA, TRIP has also compiled the following lists of key, needed public transit improvements in the state that are currently unfunded.

Chart 10. Needed Public Transit Improvements in Massachusetts that lack adequate funding to proceed.

Type of facility	Describe Improvement Needed	Estimated Cost (Millions)
Rail	Silver Line Phase 3	$ 1,000
Rail	Fall River/New Bedford	$ 900
Track Work & Construction	Wellington Maintenance Facility	$ 300
Rail	Blue Line to Lynn	$ 260
Vehicles	Procurement of Red Line #4 Car	$ 220
Vehicles	Procurement of 75 Commuter Rail Coaches	$ 190
Vehicles	Procurement of Green Line #9 Cars	$ 175
Vehicles	Procurement of 28 Locomotives	$ 150
Track Work & Construction	Red Line Floating Slabs and Track Reconstruction	$ 80
Signals	Commuter Rail Signal Improvements	$ 50
Power	AC Cable/Duct Replacement 039-1, 0-39-2, 0-39-3 (S. Boston)	$ 40
Power	AC Cable Duct from Alewife to Porter	$ 37
Power	Catenary Upgrade - North Cambridge Maintenance Facility	$ 32
Track Work & Construction	Rehabilitation of Drawbridge at Rockport/Ipswich	$ 30
Track Work & Construction	Lechemere Viaduct	$ 25
Signals	Green Line Signal Replacement (Park Street)	$ 25
Signals	Green Line Signal Replacement (Government Center)	$ 23
Signals	Green Line Signal Replacement (Copley)	$ 21
Power	Refurbish Orange Line Circuit Breakers	$ 21
Signals	Green Line Signal Replacement (Boylston)	$ 20
Track Work & Construction	Yard Switch Replacement and Track Reconstruction	$ 18
Power	Red Line 480 VAC Cable Replacement	$ 15
Signals	Prudential Signal Replacement(Prudential)	$ 13
Signals	Green Line Signal Replacement (Arlington)	$ 13
Power	Harvard to Alewife Cable Replacement	$ 13
Track Work & Construction	Wollaston Station Accessibility & Egress Improvements	$ 11
Signals	Green Line Signal Replacement (Auditorium)	$ 11
Signals	Green Line Signal Replacement (Haymarket)	$ 9

Source: Massachusetts Transportation Finance Commission and the MBTA

Conclusion

It is critical that Massachusetts develop and maintain a modern transportation system that can accommodate the state's growth in population, vehicle travel and economic development. Further modernization of Massachusetts' system of roads, bridges and public transit is crucial to

providing a safer, more efficient transportation system, while improving the quality of life and economic livelihood of the state's residents. Projects designed to improve traffic flow, make driving safer, and help the state accommodate increasing levels of vehicle travel ultimately improve the state's level of mobility. As travel on Massachusetts' surface transportation system becomes more efficient, personal and commercial productivity will increase, boosting economic development and quality of life statewide.

Endnotes

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