

Falling Behind:
The Condition and Funding of Maine's
Roads, Highways & Bridges

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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

Maine's system of roads, highways, bridges and public transit provides the state's residents, visitors and businesses with a high level of mobility. As the backbone that supports the Pine Tree State's economy, Maine's surface transportation system provides for travel to work and school, visits with family and friends, and trips to tourist and recreation attractions while simultaneously providing businesses with reliable access for customers, suppliers and employees. With a rising unemployment rate of 8.6 percent, and with the state's population continuing to grow, Maine must improve its system of roads, highways, bridges and public transit to foster economic growth, keep business in the state, and ensure the safe, reliable mobility needed to improve the quality of life for all residents.

As Maine looks to rebound from the current economic downturn, the state will need to improve its surface transportation network, enhancing the system's ability to provide efficient and reliable mobility for residents, visitors and businesses. Making needed improvements to Maine's roads, highways, bridges and public transportation systems could provide a significant boost to the state's economy by creating jobs and stimulating long-term economic growth as a result of enhanced mobility and access. But a failure to address the state's growing transportation challenges will threaten Maine's economic recovery.

The approval earlier this year of the American Recovery and Reinvestment Act gave a helpful boost to the state's transportation system, providing approximately \$131 million in stimulus funding for highway and bridge improvements and \$13 million for public transit improvements in Maine. This funding can serve as a down payment on needed road, highway, bridge and transit improvements, but it is not sufficient to allow the state to proceed with numerous projects needed to enhance its surface transportation system. Meeting Maine's need to repair, improve and maintain its system of roads, highways, bridges and transit will require a significant, long-term boost in transportation funding at the state, federal and local levels.

Maine faces a \$3.3 billion gap over the next ten years in needed funding to allow the state to significantly improve road and bridge conditions, relieve congestion and enhance traffic safety and economic development. Without a significant boost in state or federal transportation funding, Maine will be unable to move forward with numerous projects needed to improve traffic safety, enhance economic development opportunities, relieve traffic congestion and maintain overall conditions.

- From 2009 to 2018, the Maine Department of Transportation (MaineDOT) estimates that \$6.5 billion will be needed to improve road and bridge conditions, relieve congestion and enhance safety and economic development. However, during that time, only \$3.2 billion will be available under current funding, leaving a funding shortfall of \$3.3 billion.
- Unless Maine is able to close its transportation funding gap, the condition of the state's roads, highways and bridges will deteriorate, needed roadway safety improvements will not proceed, traffic congestion will worsen and economic development opportunities in the state will be lost.

- Needed highway improvements that cannot proceed without a significant boost in state transportation funding include a bypass on US 1 from Wiscasset to Edgecomb, the completion of the northeast portion of the bypass on SR 25 in Gorham, the widening of a two-mile section of US 202 from Augusta to Manchester, a bypass from I-395 to SR – 9 from Brewer to Eddington and the modernization of a 26-mile section of Route 161 from Caribou to Cross Lake Township. A full listed of needed highway projects that cannot proceed without a significant boost in funding is included in the report.
- With the amount of funding currently available, the share of the state’s roads and highways that need significant repairs is expected to increase. Currently, 1,646 miles, or 18 percent, of state roads and highways are in need of significant repairs. But by 2014, under current funding conditions, the miles of state roads and highways that will need significant repairs is expected to increase to 2,100 miles, or 24 percent of state roads and highways.
- Unless funding for state highway repairs is increased, the miles of roadway that the state will be able to reconstruct or rehabilitate will decrease significantly in the future from over 100 miles per year to less than 50 miles per year.
- MaineDOT is currently only able to fund approximately 50 percent of its pavement preservation needs.
- Because of a lack of adequate repairs, the number of miles of state roadway that are posted or weight-restricted, largely during the spring, will increase in the coming years. In 2008, 2,212 miles of state roadway were posted or weight-restricted. That number is projected to increase to 2,400 miles by 2011 under current funding.
- Without an additional source of transportation funding, the amount of capital investment in Maine’s highway transportation system will drop drastically in the coming fiscal year. While the state projects a total of \$493 million in state and federal highway revenue to be available in Fiscal Year 2010, approximately \$198 million will be available each year from FY 2011 through FY 2014.
- Further compounding Maine’s transportation funding shortfall is the escalation of the cost of roadway improvements due to increases in the price of key materials needed for highway and bridge construction. Over the five-year period from August 2004 to August 2009 the average cost of materials used for highway construction, including asphalt, concrete, steel, lumber and diesel has increased 39 percent.

The condition of Maine’s major roads is worsening, with one quarter rated in poor or mediocre condition.

- In 2008, 25 percent of Maine’s major roads were rated in either poor or mediocre condition (13 percent poor and 12 percent mediocre). This includes Interstates, rural highways connecting urban areas of the state and key urban streets. In 2005, 20 percent of the state’s major roads were rated in poor or mediocre condition (11 percent poor and nine percent mediocre).

- Roads rated in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed. Roads rated in mediocre condition may show signs of significant wear and may also have some visible pavement distress. Most pavements in mediocre condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.
- Roads in need of repair cost each Maine motorist an average of \$250 annually in extra vehicle operating costs – \$251 million state-wide. Extra vehicle operating costs include accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.
- The functional life of Maine’s roads is greatly affected by the state’s ability to perform timely maintenance and upgrades to ensure that structures last as long as possible. It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.
- Included in this report is a list of some of the segments of deteriorated roadway in the state that are most in need of repair.

One-third of bridges in Maine are structurally deficient or functionally obsolete. Deficient bridges impact commercial and personal mobility as well as safety. This report contains a list of bridges in the state with the lowest sufficiency rating.

- Fourteen percent of Maine’s bridges are rated as structurally deficient, showing significant deterioration to decks and other major components. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient are often restricted to carrying lower weight vehicles or are closed if they are found to be unsafe.
- The classification of a bridge as "structurally deficient" does not mean the structure is unsafe. Maine’s bridge safety inspection program ensures that each bridge is safe for vehicles weighing less than the posted weight limit. If the inspection determines a bridge to be unsafe for vehicles, the bridge is closed or posted for lower weight vehicles until repaired or replaced.
- Nineteen percent of Maine’s bridges are functionally obsolete. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe.
- 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.

- The overall rating for bridges is determined based on deck, substructure and superstructure conditions, as well as the amount of traffic carried by the bridge and the length of a detour that would be required if the bridge were closed. Bridge ratings range from 1 to 9, with 9 being the best condition and scores for any bridge component being four or below considered deficient.
- This report contains a list of some of Maine's structurally deficient bridges, with average daily traffic (ADT) of at least 2,500 vehicles.

Due to increases in population, economic growth and vehicle travel, Maine's system of roads and bridges is under more stress than ever.

- Maine's population increased seven percent since 1990, from 1.2 million in 1990 to 1.3 million residents in 2008. Maine's population is expected to increase to 1.4 million residents by 2025.
- Vehicle travel on Maine's major highways increased 21 percent between 1990 and 2008, from 11.8 billion vehicle miles traveled in 1990 to 14.4 billion vehicle miles traveled in 2008.
- Vehicle travel in the state is expected to increase by 20 percent by 2025.
- Maine has also experienced moderate economic growth since 1990. From 1990 to 2008, Maine's gross domestic product (GDP), a measure of the state's economic output, increased by 29 percent, when adjusted for inflation.

An average of 178 people were killed each year in crashes on Maine's roads from 2004 to 2008. Improving safety features on Maine's 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 889 people were killed in Maine in traffic accidents from 2004 to 2008, an average of 178 fatalities per year.
- In 2008, Maine had a traffic fatality rate of 1.08 fatalities per 100 million vehicle miles traveled, lower than the national average of 1.27.
- Maine's rural, non-Interstate roads have a traffic fatality rate of 1.57 fatalities per 100 million vehicle miles of travel -- more than triple the fatality rate on all other roads in the state (0.42).

- Where appropriate, 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 can reduce traffic fatalities and accidents while improving traffic flow to help relieve congestion.
- 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.

Addressing Maine’s transportation needs will enhance the state’s economic recovery by creating short- and long-term jobs. Uncertainty about the future size and scope of the federal surface transportation program is further exacerbating Maine’s transportation funding challenges.

- Every year, \$32 billion in goods are shipped annually from sites in Maine and another \$29 billion in goods are shipped annually to sites in Maine, mostly by truck.
- Seventy-eight percent of the goods shipped annually from sites in Maine are carried by trucks and another nine percent are carried by courier services, which use trucks for part of the deliveries. Similarly, 80 percent of the goods shipped to sites in Maine are carried by trucks and another 13 percent are carried by courier services.
- Commercial trucking in Maine is projected to increase by 28 percent by 2020.
- The unemployment rate in Maine was 8.6 percent in August 2009, a significant increase from August 2008, when the unemployment rate in Maine was 5.4 percent.
- A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.
- Congress is currently deliberating over a long-range federal surface transportation program. The current program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), expired on September 30, 2009, although the program has been extended until October 31st, 2009.
- Until a long-term federal surface transportation program is approved, state transportation departments are limited in their ability to fund transportation improvements in their state because of uncertainty about future levels of federal transportation spending.
- The level of funding and the provisions of a long term federal surface transportation program will significantly impact the future quality of Maine's surface transportation system.

All data used in the report is the latest available. Sources of information for this study include the U.S. Department of Transportation (USDOT), the 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 Maine Department of Transportation (MaineDOT).

Introduction

Maine's system of roads and bridges provides the state's 1.3 million residents and its visitors with a high level of mobility. The state's extensive system of roads and bridges serves as the backbone of Maine's economy and enables residents and visitors to go to work, visit family and friends, move goods to market, and frequent tourist and recreational attractions.

The continued improvement and expansion of Maine's surface transportation network is crucial to providing a safer, more efficient transportation system, while improving the economic livelihood of the state and accommodating future growth.

As Maine looks to rebound from the current economic downturn, the improvement of the state's transportation system could play an important role in improving Maine's economic well being by providing critically needed jobs in the short term and by improving the productivity and competitiveness of the state's businesses in the long term.

As Maine faces the challenge of preserving and improving its transportation system, the future level of transportation funding will be a critical factor in whether the state's residents, businesses and visitors continue to enjoy access to a safe and efficient transportation network.

Maine currently faces a \$3.3 billion gap over the next ten years in needed funding to allow the state to significantly improve road and bridge conditions, relieve congestion, enhance safety and foster economic development. Without a significant boost in state or federal transportation funding, Maine will be unable to move forward with numerous projects needed to improve traffic safety, enhance economic development opportunities, relieve traffic congestion and maintain overall conditions.

This report examines the condition, use and safety of Maine's roads, highways and bridges and the state's ability to fund projects needed to improve physical conditions and traffic safety as well as assist in the state's economic recovery.

Population and Travel Trends in Maine

Maine residents enjoy modern lifestyles that rely on a high level of personal and commercial mobility. Increases in both the state's population and the amount of travel of its residents and visitors have led to additional demands being placed on Maine's surface transportation system, particularly its key highways and roads. It is critical that Maine develop and maintain a transportation system that can accommodate future growth in population, vehicle travel and economic development.

Maine's population reached 1.3 million in 2008, increasing seven percent since 1990, when the state's population was approximately 1.2 million.¹ The state's population is expected to increase to 1.4 million by 2025.²

Population and economic growth in Maine have resulted in a corresponding increase in vehicle travel in the state. From 1990 to 2008, annual vehicle miles of travel (VMT) in Maine increased 21 percent, from 11.8 billion annual VMT to 14.4 billion VMT.³ Vehicle travel in Maine is expected to increase 20 percent by 2025 to approximately 17.3 billion annual VMT.⁴

Maine has experienced moderate economic growth since 1990. From 1990 to 2008, Maine's gross domestic product (GDP), a measure of the state's economic output, increased by 29 percent, when adjusted for inflation.⁵

The state has identified projects that are needed to improve the current highway transportation system to ease congestion, enhance economic development and improve traffic safety, but would require a significant boost in state or federal funding to proceed. Those projects include the following:

Chart 1. Needed projects to improve mobility in Maine that currently lack adequate funding to proceed.

	Route Name	County	From	To	Length(Mi.)	ADT	Improvement Needed	Total Project Cost
1	US 1	Lincoln	Wiscasset	Edgecomb	4	20,000	northerly 2-lane bypass highway	\$80 million
2	US 2/201	Somerset	Skowhegan	Skowhegan	6 to 10	21,000	easterly 2-lane bypass highway	\$45-60 million
3	SR 25	Cumberland	Gorham	Gorham	5	22,000	northerly 2-lane bypass highway	\$40 million
4	US 1	Aroostook	Presque Isle	Presque Isle	10	19,000	easterly 2-lane bypass highway	\$85 million
5	US 1 - SR 161	Aroostook	Caribou	Caribou	4	11,000	2-lane connector highway	\$20 million
6	I-395 - SR 9	Penobscot	Brewer	Eddington	10	19,000	2-lane connector highway	\$70-80 million
7	US 202	Kennebec	Augusta	Manchester	2	21,000	widening for 2 added thru lanes	\$17 million

Source: MaineDOT response to TRIP survey (ADT = Average Daily Traffic)

Bridge Conditions in Maine

Maine’s 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.

The state’s bridges are inspected regularly to determine their overall condition and to identify bridges that are in need of repair or replacement. Bridges are rated on a scale that takes into account structural adequacy, serviceability, how essential the bridge is for public use, and the importance of the bridge to public transportation in the area. The individual components of the bridge, including the deck, substructure and superstructure are also rated. These figures combine into an overall bridge sufficiency rating.

One-third of bridges in Maine (20 feet or longer) are structurally deficient or functionally obsolete. Fourteen percent of the state's bridges were rated structurally deficient in 2008.⁶ 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.

Nineteen percent of Maine's bridges were rated as functionally obsolete in 2008.⁷ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment. The following chart details the number and percentage of structurally deficient and functionally obsolete bridges in Maine.

Chart 2. Bridge Conditions in Maine

BRIDGE CONDITION	NUMBER OF BRIDGES	PERCENTAGE OF BRIDGES
Structurally Deficient	345	14%
Functionally Obsolete	444	19%
Total Deficient Bridges	789	
Total Number of Bridges	2,392	

Source: 2008 National Bridge Inventory

The Maine Department of Transportation has provided a list of some of the bridges in the state carrying at least 2,500 vehicles per day that are structurally deficient and for which repairs are not scheduled through the end of 2009. The overall rating for bridges is determined based on

deck, substructure and superstructure conditions, as well as the amount of traffic carried by the bridge and the length of a detour that would be required if the bridge was closed. Bridge ratings range from 1 to 9, with 9 being the best condition and scores for any bridge component being four or below considered deficient.

Chart 3. Structurally deficient bridges in Maine, for which significant repairs are not scheduled through the end of 2009.

Route Carried	City or County	Route or Feature Intersected	Daily Traffic	Year Built	Composite Rating
RIVER ST	Sanford	MOUSAM RIVER	5,180	1978	3.0
35	Hollis	SACO RIVER	3,191	1938	4.0
ROUTE 1	Kittery	PISCATAQUA RV./NH ROADS	10,187	1923	4.0
RT. 302	Fryeburg	LITTLE POND	3,567	1935	4.3
CUMBERLAND STREET	Westbrook	PRESUMPCOT RIVER	18,470	1954	4.3
ROUTE 9	Scarborough	B&M RR & DEPOT ST EXT	6,392	1955	4.3
ROUTE US2	Milford	RV. OVRFLW & SUNKHAZE ST.	4,520	1938	4.3
US 1	Kennebunk	KENNEBUNK RIVER	13,070	1928	4.3
RIVER RD	Thomaston	ST. GEORGE RIVER	3,439	1925	4.7
ROUTE 9	Kennebunk	KENNEBUNK RIVER	10,533	1933	4.7
ROUTE 197	Richmond	KENNEBEC RIVER	3,181	1931	4.7
STETSON ROAD	Kenduskeag	KENDUSKEAG STREAM	2,830	1932	4.7
ROUTES 11 & 100	Clinton	12 MILE STREAM	5,790	1927	4.7
187	Jonesport	CROSS COVE	2,756	1936	4.7
ROUTE 5	Waterboro	LITTLE OSSIPEE RIVER	4,200	1931	4.7
RTE 24	Gardiner	COBBOSSEE STREAM	7,580	1933	4.7
IN PERU = N. MAIN	Peru	ANDROSCOGGIN RIVER	6,430	1930	5.0
RTE 1	Portland	PRESUMPCOT RIVER	15,588	1943	5.0
WESTERN AVENUE	Waterville	MESSALONSKEE STREAM	8,040	1947	5.0
US RTE # 1	Bath	SMO RR - CITY STREETS	18,093	1958	5.0
CUMBERLAND STREET	Westbrook	PRESUMPCOT RIVER	18,470	1954	5.0
ROUTE US2	Rumford	ELLIS RIVER	3,420	1928	5.3
ROUTE 228	Washburn	SALMON BROOK	2,570	1925	5.3
US ROUTE 1 BYPASS	Kittery	PISCATAQUA RV. & ROADS	13,156	1940	5.7
RTE 7-137	Belfast	PASSAGASSAWAUKEAG RV	4,107	1952	6.0

Source: MaineDOT response to TRIP survey

Maine Road Conditions

The life cycle of Maine's 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 state's ability to

maintain the system in its current condition may decline in the coming years, unless additional transportation funding is secured.

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 2008, 25 percent of Maine's major roads were rated in either poor or mediocre condition. Thirteen percent of the state's major roads were rated in poor condition and another 12 percent were rated in mediocre condition. This includes Interstates, highways, connecting urban arterials and key urban streets that are maintained by MaineDOT.⁹ Pavement conditions on Maine's most heavily traveled roads have gotten worse over the last three years. In 2005, 20 percent of the state's major roads were rated in poor or mediocre condition (11 percent poor and nine percent mediocre).¹⁰

Roads rated in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed. Roads rated in mediocre condition may show signs of significant wear and may also have some visible pavement distress. Most pavements in mediocre condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.

TRIP estimates that driving on roads in need of repair costs Maine's motorists \$251 million annually – \$250 per driver – 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.¹¹

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.¹²

The following chart lists some of the segments of deteriorated roadway in the state that are in need of repair.

Chart 4: Maine roadways in need of repair.

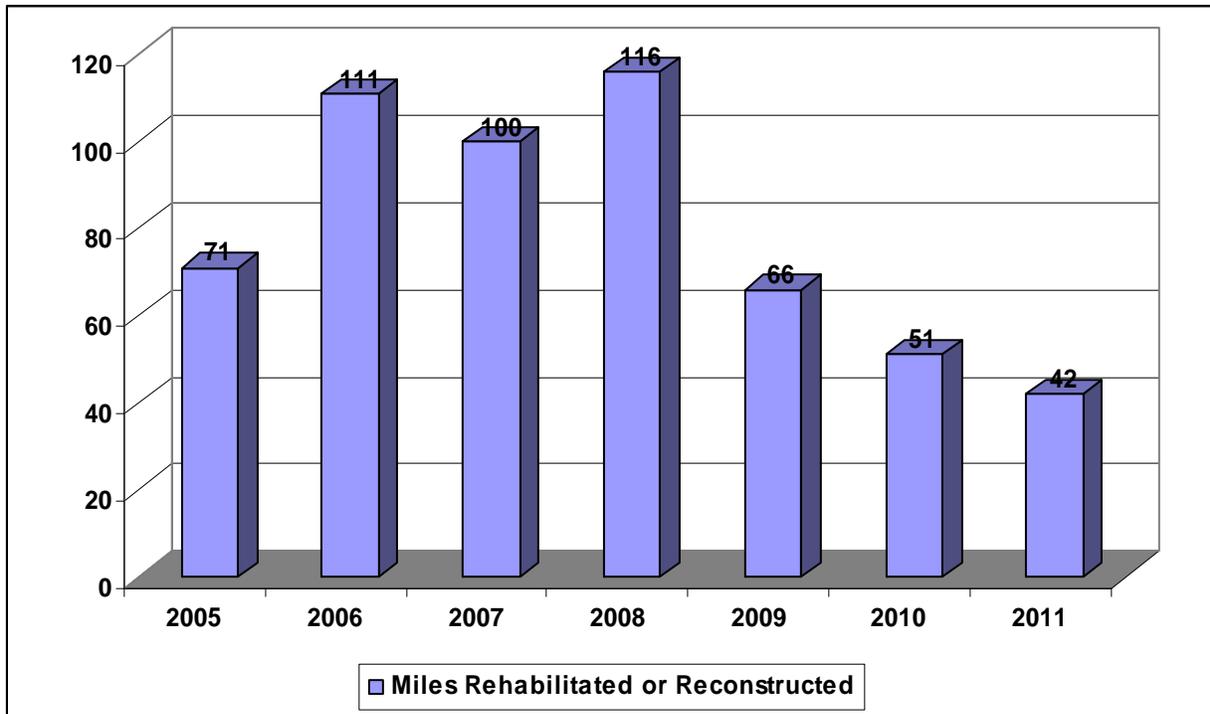
Route Name	City or County	From	To	Length (Miles)	Daily Traffic
U.S. Route 2	Houlton	U.S. Route 1	0.14 n/o Garrison	2.2	3,500
State Route 164	Presque Isle	Main St.	0.40 n/o Washburn Town Line	4.59	2,404
State Route 6	Monson	0.12 e/o Blanchard Rd.	0.04 mi. e/o Monson Jct. Ln.	5	2,400
State Route 11	Augusta	Weston St.	Townsend Rd.	2.34	15,427
State Route 15	Dover-Foxcroft	0.25 s/o Atkinson Rd.	0.45 s/o Range Rd.	3.57	2,700
State Route 224	Sanford	State Route 4A	Bridge St.	2.09	8,000
State Route 23	Dexter	State Route 7	0.28 mi n/o Fellows Rd.	2.6	3,000
U.S. Route 201	Winslow	Vassalboro Town Line	0.04 mi n/o Lithgow St.	3.51	6,043
Interstate 95 SB	Medway	1.51 mi. n/o T2R9 TWP T.L.		9.26	3,200
U.S. Route 202	Hampden	0.28 mi. e/o Constitution Ave.	Ramp on from US-202	3.84	6,000
U.S. Route 202	Windham	River Rd.	Swett Rd.	2.21	6,000
State Route 196	Lewiston	Lisbon Town Line	0.07 s/o Read St.	2.32	13,259
U.S. Route 1	Jonesboro	School Rd.	0.34 e/o Whitneyville Rd.	2.49	5,155
State Route 17	Jefferson	Winslows Mill Rd.	Cony Rd. (Augusta)	12.6	8,000
State Route 117	Harrison	0.18 e/o Summit Hill Road	0.14 e/o Otisfield Town Line	2.56	3,000
State Route 5	Saco	Spring St.	0.04 s/o Biddford Town Line	4.18	5,116
Broadway	South Portland	0.23 n/o Scarborough T.L.	Evans St.	2.67	12,000
U.S. Route 1	Madawaska	Beaulieu Rd.	0.33 n/o Frenchville Town Line	6.3	5,000
U.S. Route 202 SB	Auburn	Chasse St.	Washington St., NB + SB	2.09	9,000
U.S. Route 1	Rockport	0.50 mi. s/o Pascal Ave.	Route 52 (Camden)	3.11	11,000
U.S. Route 202	Winthrop	Annabessacook Rd.	0.07 e/o Old Winthrop Rd.	7.07	15,000
U.S. Route 2	Dixfield	0.88 e/o Common Rd., Norton.	Wilton-Carthage Town Line	2.58	3,750
Interstate 95 SB	Kittery	1.65 mi. s/o York Town Line	End of I-95 (NH State Line)	2.54	30,000
U.S. Route 201	Skowhegan	0.27 mi. n/o Fairfield TL	Dennis St.	5.91	8,000

Source: MaineDOT

Under current funding, the share of the state's roads and highways that need significant repairs is expected to increase. Currently, 1,646 miles, or 18 percent, of state roads and highways are in need of significant repairs. But by 2014, under current funding conditions, the miles of state roads and highways that will need significant repairs is expected to increase to 2,100 miles, or 24 percent of state roads and highways.¹³

The miles of roadway that the state will be able to reconstruct or rehabilitate will decrease significantly in the future, under current funding formulas. In 2008, the state was able to reconstruct or rehabilitate 116 miles of state roadways.¹⁴ But, under current funding conditions, the state only expects to be able to rehabilitate or reconstruct 42 miles of roadway in 2011 – less than half the mileage improved in 2008.¹⁵

Chart 5: Miles of Maine Roadways Rehabilitated or Reconstructed 2005 to 2011, based on current funding formulas



Source: MaineDOT response to TRIP survey.

Because of a lack of adequate repairs, the number of miles of state roadways that are posted or weight-restricted, largely during the spring, will increase in the coming years. In 2008, 2,212 miles of state roadway were posted or weight-restricted.¹⁶ The miles of state roadways that are posted or weight-restricted is projected to increase to 2,400 miles by 2011 under current funding.¹⁷

Traffic Safety in Maine

An average of 178 people were killed each year in motor vehicle accidents in Maine from 2004 through 2008, according to the National Highway Transportation Safety Administration.¹⁸ In those five years, a total of 889 people lost their lives on Maine's roads.

Chart 6. Traffic fatalities in Maine from 2004 – 2008

Year	Fatalities
2004	194
2005	169
2006	188
2007	183
2008	155

Source: National Highway Traffic Safety Administration.

In 2008, Maine had a traffic fatality rate of 1.08 fatalities per 100 million vehicle miles traveled, lower than the national average of 1.27.¹⁹ Maine's rural, non-Interstate roads have a traffic fatality rate of 1.57 fatalities per 100 million vehicle miles of travel, more than triple the fatality rate on all other roads in the state (0.42).²⁰

Three major factors associated with fatal vehicle accidents are driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is a contributing factor in one-third of fatal and serious traffic accidents. Improving safety on Maine's 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.

Where appropriate, 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 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.²¹

Roads with poor geometry, insufficient clear distances, without turn lanes, inadequate shoulders for the posted speed limits, or poorly laid out intersections or interchanges, pose greater risks to motorists, pedestrians and bicyclists.

The following chart shows the correlation between specific needed road improvements and the reduction of fatal accident rates nationally.

Chart 7. Reduction in fatal accident rates after roadway improvements.

Type of Improvement	Reduction in Fatal Accident Rates after Improvements
New Traffic Signals	53%
Turning Lanes and Traffic Signalization	47%
Widen or Modify Bridge	49%
Construct Median for Traffic Separation	73%
Realign Roadway	66%
Remove Roadside Obstacles	66%
Widen or Improve Shoulder	22%

Source: TRIP analysis of U.S. Department of Transportation data

Importance of Transportation to Economic Growth

Supporting economic recovery by increasing business productivity as a result of improved mobility is a critical task for state and local governments. Maine has been particularly hard hit by the nation's recent economic downturn. In August 2009, Maine's unemployment rate reached 8.6 percent, a significant increase from the state's 5.4 unemployment rate in August 2008.²²

Road, highway and bridge improvement projects provide an economy an immediate stimulus in the form of job creation, within the construction industry and the broader state economy. A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including

approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.²³

Long-term employment growth can be stimulated by providing a transportation system that improves business productivity. The new culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. The advent of modern national and global communications and the impact of free trade in North America and elsewhere have resulted in a significant increase in freight movement. Consequently, the quality of a region's transportation system has become a key component in a business' ability to compete locally, nationally and internationally.

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 Maine. 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 Maine's

road system. The BTS report found that 78 percent of the \$32 billion in goods shipped annually from sites in Maine are transported on highways and another nine percent are carried by courier services, which use trucks for part of their deliveries.²⁴ Similarly, 80 percent of the \$29 billion in goods shipped annually to sites in Maine are carried by trucks and another 13 percent are carried by courier services.²⁵

Trucking is a crucial part of Maine's economy, as commercial trucks move goods from sites across the state to markets inside and outside the state. Commercial truck travel in Maine is expected to increase significantly over the next decade. Based on federal projections, TRIP estimates that commercial trucking will increase by 28 percent in Maine by 2020.²⁶

Transportation Funding in Maine

Without a significant boost in state or federal transportation funding, Maine will be unable to move forward with numerous projects needed to improve traffic safety, enhance economic development opportunities, relieve traffic congestion and maintain overall conditions. Maine faces a \$3.3 billion gap over the next ten years in needed funding to allow the state to significantly improve road and bridge conditions, relieve congestion and enhance safety and economic development. From 2009 to 2018, MaineDOT estimates that \$6.5 billion will be needed to improve road and bridge conditions, relieve congestion, enhance safety and foster economic development. However, during that time, only \$3.2 billion will be available under current funding formulas.²⁷

MaineDOT estimates that under current funding conditions, the number of miles of roadway that the state will be able to reconstruct or rehabilitate will decrease significantly in the

future. By 2011, total spending on roadway rehabilitation and reconstruction will be less than half the amount spent in 2008 (\$108 million in 2008; \$41 million projected in 2011).²⁸

Without an additional source of transportation funding, the amount of capital investment in Maine's highway transportation system will drop drastically in the coming fiscal year. While the state projects a total of \$493 million in state and federal highway revenue to be available in Fiscal Year 2010, approximately \$198 million will be available each year from FY 2011 through FY 2014.²⁹

Further compounding Maine's transportation funding shortfall is the escalation of the cost of roadway improvements due to increases in the price of key materials needed for highway and bridge construction. While construction materials costs have stabilized somewhat during the current recession, over the five-year period from August 2004 to August 2009 the average cost of materials used for highway construction, including asphalt, concrete, steel, lumber and diesel has increased 39 percent.

Future Federal Surface Transportation Program

Transportation funding in Maine comes from a variety of sources, including state-generated and federal funds. The federal government is an important source of funding for the ongoing modernization of Maine's roads, highways, bridges and public transit system.

Federal funds provide 26 percent of revenues used annually by the MaineDOT to pay for road, highway and bridge construction, repairs and maintenance. Similarly, federal funding provides 33 percent of the revenue used to pay for the operation of and capital improvements to the state's public transit systems, which includes the purchase and repair of vehicles and the construction of transit facilities.

Another critical source of federal surface transportation funding for Maine was the American Recovery and Reinvestment Act, approved in February 2009, which provided approximately \$131 million in stimulus funding for highway and bridge improvements and \$13 million for public transit improvements in Maine, a total of \$144 million. This funding serves as a down payment on needed road, highway, bridge and transit improvements, but it is still not sufficient to allow the state to proceed with numerous projects needed to modernize its surface transportation system.

To ensure that federal funding for highways and public transit in Maine and throughout the nation continues beyond the expiration of the current federal surface transportation program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), Congress will need to approve new long-term federal surface transportation legislation by October 31, 2009, when the one-month extension of the current program expires.

The level of funding and the provisions of a future federal surface transportation program will have a significant impact in Maine on the future quality of the state's surface transportation system. But until a long-term federal surface transportation program is approved, state transportation departments are limited in their ability to fund transportation improvements because of uncertainty about future levels of federal transportation spending.

The crafting of a new federal highway and transit program is also occurring at a time when the nation's surface transportation program faces numerous challenges, including significant levels of deterioration, increasing traffic congestion, increasing construction costs and a decline in revenues going into the Federal Highway Trust Fund.

Recent declines in federal surface transportation revenues, as well as significant increases in the cost of transportation construction materials, will likely make it more difficult

for Congress to authorize a new federal surface transportation program that adequately funds needed improvements to the nation's roads, highways, bridges and public transit systems.

Conclusion

As Maine looks to recover from its recent economic downturn, it is critical that the Pine Tree State avoid falling behind in providing a well-maintained 21st century network of roads, bridges highways and public transit. To achieve a growing and dynamic state, it is essential that Maine provide a surface transportation system that can accommodate the mobility demands of a modern society.

Insuring that the state's economy fully recovers and that the quality of life in Maine is enhanced by a well-maintained, safe and efficient system of roads, highways, bridges and public transit, however, will require a boost in funding from either local, state or federal governments.

Further modernization of Maine's 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.

Federal stimulus money has provided a helpful down payment on an improved transportation system. However, without a substantial boost in state or federal surface transportation funding, numerous needed projects to expand capacity and upgrade the condition of Maine's roads, bridges, highways and transit will not move forward, hampering the state's ability to enhance not only mobility, but also economic development statewide. The future provisions and funding levels of future state and federal surface transportation programs will be a

critical factor in whether Maine is able to reap the benefits of a modern surface transportation system.

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Endnotes

¹ U.S. Census data.

² U.S. Census Bureau, Population Division, Interim State Population Projections, 2005

³ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 1990 and Federal Highway Administration preliminary 2008 VMT estimates

⁴ TRIP calculation based on U.S. Census and Federal Highway Administration data..

⁵ TRIP analysis of data from the U.S. Bureau of Economic Analysis. The nation's Gross Domestic Product has been adjusted for inflation based on the Consumer Price Index.

⁶ Federal Highway Administration – National Bridge Inventory 2008.

⁷ Ibid.

⁸ Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.

⁹ MaineDOT response to TRIP survey, 2009.

¹⁰ Ibid.

¹¹ Highway Development and Management: Volume Seven. Modeling Road User and Environmental Effects in HDM-4. Bennett, C. and Greenwood, I. 2000.

¹² Your Driving Costs. American Automobile Association, 2008.

¹³ MaineDOT response to TRIP survey, 2009.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics, National Highway Traffic Safety Administration, 2004-2008 www.fhwa.dot.gov and www-fars.nhtsa.dot.gov.

¹⁹ TRIP analysis of 2008 NHTSA and FHWA data.

²⁰ Ibid.

²¹ Highway Safety Evaluation System, 1996 Annual Report on Highway Safety Improvement Programs, U.S. Department of Transportation.

²² U.S. Department of Labor, Bureau of Labor Statistics. 2009. Local Area Unemployment Statistics.

²³ Federal Highway Administration (2007). Employment Impacts of Highway Infrastructure Investment.

²⁴ 2002 Commodity Flow Survey, U.S. Census Bureau – Bureau of Transportation Statistics. www.census.gov.

²⁵ Ibid.

²⁶ TRIP estimate based on Bureau of Transportation Statistics estimates.

²⁷ MaineDOT response to TRIP survey.

²⁸ Ibid.

²⁹ Ibid.