

Maine's Top 50 Transportation Challenges and Improvements Needed to Address Them

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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 surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Executive Summary

Maine's extensive system of roads, highways and bridges provides the state's residents, visitors and businesses with a high level of mobility. As the backbone of the Pine Tree State's economy, Maine's surface transportation system plays a vital role in the state's economic well-being, and is an integral part of what makes Maine an attractive place to live, work, visit and do business.

However, increasing roadway and bridge deterioration, traffic safety concerns, and growing congestion threaten to stifle economic growth and negatively impact the quality of life of the state's 1.3 million residents. Due to insufficient transportation funding at the federal, state and local level, Maine faces numerous challenges in providing a road, highway and bridge network that is smooth, well-maintained, as safe as possible, and that affords a level of mobility capable of supporting the state's economic goals.

As Maine looks to build and maintain a thriving and diverse economy, it will need to modernize its transportation system by improving the physical condition of its roads, highways and bridges, and enhancing the system's ability to provide efficient, safe and reliable mobility to the state's residents, visitors and businesses. Making needed improvements to Maine's roads, highways and bridges will provide a significant boost to the state's economy by stimulating short and long-term economic growth.

Numerous segments of Maine's transportation system have significant deterioration, are congested or crowded, lack some desirable safety features, and do not have adequate capacity to provide reliable mobility, creating challenges for Maine's residents, visitors, businesses and state and local governments. This report looks at the condition and use of Maine's system of roads, highways and bridges and provides information on the state's top 50 transportation challenges and the improvements needed to address these challenges.

Deficient roads, highways and bridges, and crowded or congested routes in Maine are posing mounting challenges to the state's residents, visitors and businesses in the form of lost time, increased vehicle operating costs and the financial burden of making needed transportation improvements.

- Maine's top 50 transportation challenges as ranked by TRIP include: Twelve sections of major roads or highways that need significant repairs or reconstruction, 19 major bridges in the state that have significant deficiencies and need to be rebuilt or reconstructed; one improvement to a maritime facility, and 18 sections of the state's transportation system that need improvements to address multiple challenges by improving safety, increasing access or improving road or bridge conditions.
- TRIP ranked Maine's top transportation challenges by giving each segment or facility an overall score, based on a scale that included points for the following categories: current volume of daily travel or ridership; the challenge posed to the public based on the significance of the problem or deficiency; the importance of the route or facility to

regional, interstate or international travel patterns; the importance of the route or facility to the regional economy; and, the cost to repair the deficiency.

- The following list details the top 10 transportation challenges in Maine. Further details about each challenge, as well as the full list of 50 challenges, can be found in the [Appendix](#).
- 1. Needed Reconstruction of a portion of Route 3 in Bar Harbor.** Addressing this challenge will require reconstructing 4.8 miles of Route 3 in Bar Harbor from approximately one half-mile west of Sand Point Road to Route 233. Estimated cost is \$14 million. Route 3, the Acadia All-American Road, is perhaps the most significant highway in Maine for the tourism industry, providing access to Acadia National Park and over 1,000 beds for lodging. It carries approximately 10,317 vehicles per day. The current design and construction of the road lead to constant cracking at the margins. Safety will be greatly improved with better road geometrics, improved access and improved facilities for pedestrian and bicycle. This completes Route 3 improvement projects from the head of the island near Trenton to Bar Harbor.
 - 2. Needed Replacement of Union Street Bridge in Bangor.** Addressing this challenge will require replacing the Union Street Bridge over I-95 in Bangor. Estimated cost is \$8.7 million. This is a critical bridge over I-95 on Union Street (Route 222), providing access to Bangor International Airport and the University of Maine at Bangor.
 - 3. Needed Reconstruction of a portion of Route 302 in Portland area.** Addressing this challenge will require reconstructing Route 302 from Stack Em Inn Road and extending west 5.19 miles. Estimated cost is \$7.4 million. Route 302 is the major highway from Portland to Fryeburg, Maine and Conway, New Hampshire. It is a major route for commerce, supplying raw products and finished goods to market, as well as a significant commuter route for the labor force in the Greater Portland labor market. This route also serves the tourist rich areas of Fryeburg, Maine and Conway, New Hampshire. There are no practicable alternative routes without adding substantial time and cost.
 - 4. Needed Replacement of Pine Point Crossing Bridge in Scarborough.** Addressing this challenge will require replacing the Pine Point Crossing Bridge over the Pan Am Railroad. Estimated cost is \$3.3 million. This bridge, located on Pine Point Road (Route 9), provides primary access to the Coastal Beaches surrounding the Cumberland-York County boundary. The bridge carries an important highway supporting tourism economy. Loss of the bridge will have negative economic impact especially to businesses along this section of Route 9. There are no practicable alternative routes without adding substantial time and cost.
 - 5. Needed Replacement of Bar Mills Bridge from Buxton to Hollis.** Addressing this challenge will require replacing the deteriorated Bar Mills Bridge over the Saco River at the Buxton – Hollis town line. Estimated cost is \$8.3 million. The replacement of this bridge will improve safety and access and provide a more direct connection from Buxton to Hollis.
 - 6. Needed Capacity Expansion of the International Marine Terminal (IMT).** Addressing this challenge will require property acquisition to increase the capacity of the terminal, providing direct rail access to the terminal, and other infrastructure improvements. Estimated cost is \$9 million. The International Marine Terminal (IMT) in

Portland was selected by the Icelandic Steamship Company, Eimskip, to serve as their North American logistical hub, and only port of call in the US. They have been carrying freight to and from Portland since March 2013. Maine businesses will benefit from competitive access to important markets in Eastern Canada, Scandinavia and Northern Europe.

- 7. Needed Replacement of Durham Bridge between Durham and Lisbon.** Addressing this challenge will require replacing the Durham Bridge (Route 9) over the Androscoggin River. Estimated cost is \$6.8 million. This is an essential bridge over the Androscoggin River. Route 9 provides a major commuter route through high-population regions, from southern and western Kennebec through the rural areas of Cumberland County west of I-295. Route 9 is important as a commuter route for work force from rural areas to the service centers communities along its length from Gardiner to Portland. There are no practicable alternative routes without adding substantial time and cost.
- 8. Needed Reconstruction of a portion of River Road in Westbrook and Windham.** Addressing this challenge will require reconstructing three miles of River Road from Westbrook town line to 0.17 miles south of the intersection of Chute and Depot Road. Estimated cost is \$4.8 million. River Road, an important commuter route, holds significant regional importance as a “bypass” alternative to congestion on Route 302 between Portland and Windham. It is an important route for goods and services that support regional businesses. Alternative routes are available, but with increased travel times and cost.
- 9. Needed Reconstruction of a portion of Route 2 in Old Town and Milford.** Addressing this challenge will require reconstructing 0.75 miles of Route 2 from Bradley Road to 0.29 miles north of Ferry Road. Estimated cost is \$3.5 million. Route 2 provides a major non-interstate link from Houlton to Bangor and is a critical link from the forests of the region to the lumber and paper mills of the area, including those in Old Town, Bucksport and Lincoln.
- 10. Needed Construction of the Approach to the International Bridge at Fort Kent.** Addressing this challenge will require constructing the approach associated with replacing the International Bridge on Route 1 in Aroostook. Estimated cost is \$5.2 million. Route One connects the border crossings at Ft Kent, Madawaska, and Van Buren. This corridor, which carries approximately 8,100 vehicles per day, is the principal highway link to Route 11, Route 161, and to I-95 in Smyrna and Houlton. It is the transportation backbone of the natural resource based economy, serving as the gateway to the vast undeveloped forest of the “Maine Woods” and supplying raw products to paper and lumber mills throughout northern Maine. Route One also serves as a critical corridor for the logging, agricultural, winter sport and tourism industries. It also provides improved access to Canadian seaports.

Growth in population and vehicle travel has far outstripped the current capacity of Maine’s transportation system. The state’s population and economy will continue to grow in the future, bringing mounting challenges for the existing network of roads and bridges.

- From 1990 to 2012, Maine’s population increased by eight percent, from approximately 1.2 million to approximately 1.3 million.

- From 1990 to 2011, annual vehicle-miles-of-travel (VMT) in the state increased by 20 percent, from approximately 11.9 billion VMT to 14.2 billion VMT. Based on travel and population trends, TRIP estimates that vehicle travel in Maine will increase another 15 percent by 2030.
- Every year, \$30.9 billion in goods are shipped from sites in Maine and another \$41.1 billion in goods are shipped to sites in Maine, mostly by trucks. Eighty-one percent of the goods shipped annually from sites in Maine are carried by trucks and another 13 percent are carried by parcel, U.S. Postal Service or courier services, which use trucks for part of their deliveries.

Maine’s extensive transportation system has some road and bridge deficiencies, lacks some desirable safety features and experiences severe congestion in key areas, resulting in significant costs to the state’s motorists. Improvements to the condition and efficiency of the state’s transportation system will enhance quality of life, roadway safety and economic development.

- Maine’s population and economy will continue to grow in the future, bringing mounting challenges for the existing network of roads and bridges. The state will need to expand key roads, highways and bridges to increase mobility and ease traffic congestion, make needed road and bridge repairs, and improve roadway safety.
- Maine’s system of 22,874 miles of roads and 2,408 bridges carries 14.2 billion vehicle miles of travel annually.
- In 2011, nine percent of Maine’s major roads were in poor condition and an additional 24 percent were in mediocre condition.
- The pavement data in this report is provided by the Federal Highway Administration, based on data submitted annually by the Maine Department of Transportation (MaineDOT) on the condition of major state and locally maintained roads and highways in the state.
- Fifteen percent of Maine’s bridges are rated structurally deficient. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks, school buses and emergency services vehicles.
- Eighteen percent of Maine’s bridges are rated as functionally obsolete. Bridges that are functionally obsolete no longer meet current highway design standards or are inadequate to accommodate current traffic levels, often because of narrow lanes, inadequate clearances or poor alignment.
- Maine’s urban roads are becoming increasingly congested, hampering commuting and commerce while reducing economic opportunities and quality of life in the state. Unless

Maine's transportation system is improved and enhanced, congestion will worsen dramatically in the coming years.

- Roadway features are likely a contributing factor in approximately one-third of traffic fatalities. There were 136 traffic fatalities in 2011 in Maine. A total of 794 people died on Maine's highways from 2007 through 2011.
- Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.
- Maine's traffic fatality rate of 0.95 fatalities per 100 million vehicle miles of travel in 2011 was lower than the national average of 1.10.
- Where appropriate, highway improvements can reduce traffic fatalities and crashes while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; improved lighting; adding rumble strips, wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; and, better road markings and traffic signals.

Transportation projects that improve the efficiency, condition or safety of a highway provide significant economic benefits by reducing transportation delays and costs associated with a deficient transportation system. Some benefits of transportation improvements include the following.

- Improved business competitiveness due to reduced production and distribution costs as a result of increased travel speeds and fewer mobility barriers.
- Improvements in household welfare resulting from better access to higher-paying jobs, a wider selection of competitively priced consumer goods, additional housing and healthcare options, and improved mobility for residents without access to private vehicles.
- Gains in local, regional and state economies due to improved regional economic competitiveness, which stimulates population and job growth.
- Increased leisure/tourism and business travel resulting from the enhanced condition and reliability of a region's transportation system.
- A reduction in economic losses from vehicle crashes, traffic congestion and vehicle maintenance costs associated with driving on deficient roads.
- The creation of both short-term and long-term jobs.

- Transportation projects that expand roadway or bridge capacity produce significant economic benefits by reducing congestion and improving access, thus speeding the flow of people and goods while reducing fuel consumption.
- Transportation projects that maintain and preserve existing transportation infrastructure also provide significant economic benefits by improving travel speeds, capacity, load-carry abilities and safety, and reducing operating costs for people and businesses. Such projects also extend the service life of a road, bridge or transit vehicle or facility, which saves money by either postponing or eliminating the need for more expensive future repairs.
- Highway accessibility was ranked the number one site selection factor in a 2011 survey of corporate executives by [Area Development Magazine](#).
- 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.
- The [Federal Highway Administration estimates](#) that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs, and reduced emissions as a result of improved traffic flow.

Sources of data for this report include the Maine Department of Transportation (MaineDOT), the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the U.S. Bureau of Transportation Statistics (BTS), the Bureau of Economic Analysis, the Maine Transportation Institute (TTI), and the U.S. Census Bureau. All data used in the report is the latest available.

Introduction

Maine's system of roads, highways and bridges forms a vital transportation network for the state's residents, visitors and businesses, providing daily access to homes, employment, shopping, recreation and customers. The modernization of Maine's transportation system could play an important role in the state's economic wellbeing 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. Improving the state's roads and bridges also enhances quality of life, making Maine a more attractive place to live, work, visit and do business.

Deteriorated roads, highways and bridges are a detriment to the state's residents, visitors, businesses and governments because they hamper mobility and cause delays, reduce economic productivity and competitiveness, and increase costs of operating vehicles for individuals and businesses because of the increased wear and tear caused by deficient pavements.

This report examines the condition, use and safety of Maine's roads, highways and bridges and looks at the sections of the state's roads, highways and bridges that pose the biggest challenges because of deterioration, traffic congestion, overcrowding, traffic crash rates or lack of adequate capacity to meet the state's need for reliable mobility. Sources of data for this report include the Maine Department of Transportation (MaineDOT), the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the U.S. Bureau of Transportation Statistics (BTS), the Bureau of Economic Analysis, the Texas Transportation Institute (TTI), and the U.S. Census Bureau. All data used in the report is the latest available.

Population, Travel and Economic Trends in Maine

Maine residents rely on a high level of personal and commercial mobility. Even throughout the recent economic downturn, the state experienced population and economic growth, resulting in an increase in the demand for mobility and a large increase in vehicle miles of travel in the Pine Tree State. To maintain and improve the quality of life in Maine and assist in the state's economic growth, it will be critical that the state invest in a well-maintained, modern transportation system that can accommodate future growth in population, tourism, vehicle travel and economic development.

Maine's population increased by eight percent between 1990 and 2012, expanding from approximately 1.2 million residents in 1990 to approximately 1.3 million residents in 2012.¹

Population and economic growth in Maine have resulted in a significant increase in vehicle travel in the state. From 1990 to 2011, annual vehicle miles of travel (VMT) in Maine increased by 20 percent, from 11.9 billion miles traveled annually to 14.2 billion VMT.² Based on population and other lifestyle trends, TRIP estimates that travel on Maine's roads and highways will increase another 15 percent by 2030.³

Condition of Maine's Roads

Maine's extensive network of roads, highways and bridges has some deficiencies and experiences congestion in key areas. Improvements to the condition and efficiency of the state's transportation system will enhance quality of life and economic development. The state's system

of 22,874 miles of roads and 2,408 bridges, maintained by local, state and federal governments, carries 14.2 billion vehicle miles of travel annually.⁴

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

According to the Federal Highway Administration (FHWA), in 2011, one third of Maine's major roads and highways were deteriorated. The FHWA pavement data in this report is based on data submitted annually by the Maine Department of Transportation (MaineDOT) on the condition of major state and locally maintained roads and highways. Nine percent of Maine's major roads were rated in poor condition, providing motorists with a rough ride.⁵ Roads rated poor 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. An additional 24 percent of Maine's major roads were rated in mediocre condition.⁶ Most pavements in mediocre condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition. An additional 22 percent of the state's major roads were in fair condition and 44 percent were in good condition.⁷

Maine Bridge Conditions

In addition to deteriorated pavement condition, approximately one-third of Maine's bridges are in need of repair or replacement.⁸ The state's bridges form key links in Maine's

highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles.

In 2012, 33 percent of Maine's bridges (20 feet or longer) were rated as structurally deficient or functionally obsolete.⁹ Approximately 15 percent of Maine's bridges were rated structurally deficient.¹⁰ 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.

Eighteen percent of Maine's bridges were rated functionally obsolete in 2012.¹¹ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment or lack adequate capacity to accommodate current traffic levels.

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, ensuring that a facility has good drainage and replacing deteriorating components. However, most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

Roadway Safety in Maine

Some segments of Maine's transportation system lack needed safety improvements that will make the driving environment safer and reduce the occurrence of crashes and fatalities.

TRIP estimates that roadway features are likely a contributing factor in approximately one-third of traffic fatalities. Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.

There were 136 traffic fatalities in 2011 in Maine.¹² A total of 794 people died on Maine's highways from 2007 through 2011.¹³ Maine's traffic fatality rate of 0.95 fatalities per 100 million vehicle miles of travel is lower than the national average of 1.10.¹⁴

Where appropriate, the severity of serious traffic crashes could be reduced through roadway improvements such as adding turn lanes, removing or shielding obstacles, adding or improving medians, improving lighting, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals.

Maine's Top 50 Transportation Challenges

Deteriorated roads, deficient bridges, roads that lack desirable safety features, and congested highways create challenges for a state's residents, visitors, businesses and local and state governments. Deficient or congested transportation routes or facilities result in delays,

reduce economic efficiency, limit economic development opportunities and represent an economic liability in the form of the cost of correcting a deficiency.

To determine which portions of the state's transportation system cause the biggest challenges in Maine, TRIP gathered information from the Maine Department of Transportation about sections of roadways. Information requested by TRIP for each section of road, highway or bridge included the severity of the problem, the improvement needed to resolve the problem, and the level of importance of the facility to regional, interstate and international travel patterns.

TRIP then gave each transportation segment or facility an overall score, based on a scale that provided points for categories, including:

- ✓ volume of daily travel;
- ✓ the severity of the problem or deficiency;
- ✓ the importance of the route or facility to regional, interstate or international travel patterns;
- ✓ the importance of the route or facility to the regional economy;
- ✓ the cost to repair the deficiency.

By assigning each surface transportation route or facility a numerical score in each category, TRIP was then able to rank Maine's top 50 transportation challenges.

Maine's top 50 transportation challenges as ranked by TRIP include: 12 sections of major roads or highways that need significant repairs or reconstruction, 19 major bridges in the state that have significant deficiencies and need to be rebuilt or reconstructed; one improvement to a maritime facility, and 18 sections of the state's transportation system that need improvements to address multiple challenges by improving safety, increasing access or improving road or bridge conditions.

The following list describes Maine's top 20 surface transportation challenges. Additional information for each route, as well as the full list of 50 challenges, can be found in [Appendix A](#).

- 1. Needed Reconstruction of a portion of Route 3 in Bar Harbor.** Addressing this challenge will require reconstructing 4.8 miles of Route 3 in Bar Harbor from approximately one half-mile west of Sand Point Road to Route 233. Estimated cost is \$14 million. Route 3, the Acadia All-American Road, is perhaps the most significant highway in Maine for the tourism industry, providing access to Acadia National Park and over 1,000 beds for lodging. It carries approximately 10,317 vehicles per day. The current design and construction of the road lead to constant cracking at the margins. Safety will be greatly improved with better road geometrics, improved access, and improved facilities for pedestrian and bicycle. This completes Route 3 improvement projects from the head of the island near Trenton to Bar Harbor.
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this section of Route 9. There are no practicable alternative routes without adding substantial time and cost.

- 5. Needed Replacement of Bar Mills Bridge from Buxton to Hollis.** Addressing this challenge will require replacing the deteriorated Bar Mills Bridge over the Saco River at the Buxton – Hollis town line. Estimated cost is \$8.3 million. The replacement of this bridge will improve safety and access and provide a more direct connection from Buxton to Hollis.
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- 8. Needed Reconstruction of a portion of River Road in Westbrook and Windham.** Addressing this challenge will require reconstructing three miles of River Road from Westbrook town line to 0.17 miles south of the intersection of Chute and Depot Road. Estimated cost is \$4.8 million. River Road, an important commuter route, holds significant regional importance as a “bypass” alternative to congestion on Route 302 between Portland and Windham. It is an important route for goods and services that

support regional businesses. Alternative routes are available, but with increased travel times and cost.

9. Needed Reconstruction of a portion of Route 2 in Old Town and Milford. Addressing this challenge will require reconstructing 0.75 miles of Route 2 from Bradley Road to .29 miles north of Ferry Road. Estimated cost is \$3.5 million. Route 2 provides a major non-interstate link from Houlton to Bangor and is a critical link from the forests of the region to the lumber and paper mills of the area, including those in Old Town, Bucksport and Lincoln.

10. Needed Construction of the Approach to the International Bridge at Fort Kent.

Addressing this challenge will require constructing the approach associated with replacing the International Bridge on Route 1 in Aroostook. Estimated cost is \$5.2 million. Route One connects the border crossings at Ft Kent, Madawaska, and Van Buren. This corridor, which carries approximately 8,100 vehicles per day, is the principal highway link to Route 11, Route 161, and to I-95 in Smyrna and Houlton. It is the transportation backbone of the natural resource based economy, serving as the gateway to the vast undeveloped forest of the “Maine Woods” and supplying raw products to paper and lumber mills throughout northern Maine. Route One also serves as a critical corridor for the logging, agricultural, winter sport and tourism industries. It also provides improved access to Canadian seaports.

11. Needed Reconstruction of a portion of Route 1 in York. Addressing this challenge will require reconstructing Route 1, beginning at the York town line and extending north 2.25 miles. Estimated cost is \$7.6 million. Modernization of portion of Route 1 will improve safety and travel efficiency on this route, which is the backbone of the region's economy, particularly benefiting tourism.

12. Needed Reconstruction of a portion of Route 2 in Dixfield. Addressing this challenge will require reconstructing 2.77 miles of Route 2 in Dixfield, from Hall Hill Road to one half-mile east of Canton Point Road. Estimated cost is \$6.6 million. Route 2 from Bangor to the New Hampshire state line is a critical east-west corridor in the state, serving local, regional, national and international commerce.

13. Needed Rehabilitation of a portion of Route 1 in Searsport. Addressing this challenge will require rehabilitating 1.85 miles of Route 1 in Searsport, from Savage Road to

Station Avenue. Estimated cost is \$5 million. Route 1 is one of the most important highways in Maine, providing for access for tourism and serving as a critical link to the Port of Searsport.

14. Needed Rehabilitation of Deer Isle-Sedgwick Bridge. Addressing this challenge will require rehabilitating the Deer Isle-Sedgwick Bridge. Estimated cost is \$3.5 million. This bridge, which carries approximately 2,837 vehicles per day, connects the towns of Stonington and Deer Isle on the island of Deer Isle to the mainland in Sedgwick. It supports the economy of one of Maine's prime lobstering communities, as well as the tourism industry. No highway alternatives are available without this bridge. Constant vigilance and maintenance of this bridge is needed due to the high coastal wind conditions.

15. Needed Replacement of Kittery Overpass Bridge. Addressing this challenge will require replacing the Kittery Overpass Bridge over Route 236. Estimated cost is \$3.2 million. The replacement of this deteriorated bridge, which travels over Route 236 and connects Maine and New Hampshire, will improve safety and travel efficiency and provide an important non-Interstate connector for commerce and for the traveling public.

16. Needed Replacement of Bridge Street Bridge in Westbrook. Addressing this challenge will require replacing the Bridge Street Bridge over the Presumpscot River in Westbrook. Estimated cost is \$4.4 million. This bridge over the Presumpscot River connects two major sections of the town of Westbrook and serves as a major regional commuter route, carrying approximately 12,320 vehicles per day. There are no practicable alternative routes without adding substantial time and cost.

17. Needed Improvements to Penobscot River Bridge in Enfield. Addressing this challenge will require making needed improvements to the Penobscot River Bridge, located on the Howland-Enfield town line. Estimated cost is \$17.1 million. This is an essential bridge on Route 6, which is a major east-west highway. The route provides a primary link between north and central Penobscot County and eastern areas of the state to Piscataquis County and points west.

18. Needed Replacement of the Covered Bridge over the Little Androscoggin River in Oxford. Addressing this challenge will require replacing the covered bridge over the Little Androscoggin River on Route 121, just northwest of West Poland Road in Oxford.

Estimated cost is \$4.3 million. Route 121 is the primary link from Oxford and its major new business, the Oxford Casino, to I-95. It also provides an efficient, direct route from the paper mill in Rumford to the interstate system.

19. Needed Reconstruction of a portion of Route 7 in Dexter. Addressing this challenge will require reconstructing 1.6 miles of Route 7, beginning one-tenth of a mile north of Mechanic Street and extending north 1.6 miles. Estimated cost is \$5.2 million. Route 7 is an important link from I-95 in Newport to Piscataquis County. Reconstruction will result in improved safety and economic access, particularly to a major lumber mill in Dover-Foxcroft.

20. Needed Reconstruction of a portion of Route 8 in Belgrade. Addressing this challenge will require reconstructing three miles of Route 8, from Route 27 in Belgrade extending north for three miles. Estimated cost is \$3.8 million. Route 8 provides a more direct link between Augusta and Anson-Madison and Norridgewock than does I-95. Agri-business, paper mill, and other natural resource based industries rely on this highway to reduce travel time to southern markets. It connects to Route 201, the major highway in the region that links to the Commercial Border Station on the USA-Canadian border northwest of Jackman. Route 8 also serves the Belgrade Lakes Region, a major recreational area in mid-Maine.

Importance of Transportation to Maine's Economy

The condition and efficiency of a region's transportation system can be a critical factor in the extent and rate of a region's economic growth. The level of mobility provided by a region's network of roads, bridges and highways has a significant impact on the productivity of local businesses. The physical condition of an area's transportation infrastructure also has a significant impact on the cost of transportation to individuals and businesses and provides an

important signal to potential employers of a region's commitment to maintaining its local transportation system

Every year, \$30.9 billion in goods are shipped from sites in Maine and another \$41.1 billion in goods are shipped to sites in Maine, mostly by trucks.¹⁵ Eighty-one percent of the goods shipped annually from sites in Maine are carried by trucks and another 13 percent are carried by parcel, U.S. Postal Service or courier services, which use trucks for part of their deliveries.¹⁶

Because it impacts the time it takes to transport people and goods, as well as the cost of travel, the level of mobility provided by a transportation system and its physical condition play a significant role in determining a region's economic effectiveness.

Maine's businesses are dependent on an efficient, safe and modern transportation system. Today's business culture demands that an area have a well-maintained and efficient system of roads, highways, bridges and public transportation if it is to be economically competitive. 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's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and Internet commerce. The result of these changes has been a significant improvement in logistics efficiency as firms move 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.

The economic benefits of a well-maintained, efficient and safe transportation system can be divided into several categories, including the following.

Improved competitiveness of industry: An improved transportation system reduces production and distribution costs by lowering barriers to mobility and increasing travel speeds. Improved mobility provides the manufacturing, retail and service sectors improved and more reliable access to increased and often lower-cost sources of labor, inventory, materials and customers.¹⁷ An increase in travel speeds of 10 percent has been found to increase labor markets by 15 to 18 percent. A 10 percent increase in the size of labor markets has been found to increase productivity by an average of 2.9 percent.¹⁸

Improved household welfare: An improved transportation system gives households better access to higher-paying jobs, a wider selection of competitively priced consumer goods, and additional housing and healthcare options. A good regional transportation system can also provide mobility for people without access to private vehicles, including the elderly, disabled and people with lower incomes.¹⁹

Improved local, regional and state economies: By boosting regional economic competitiveness, which stimulates population and job growth, and by lowering transport costs for businesses and individuals, transportation improvements can bolster local, regional and state economies. Improved transportation also stimulates urban and regional redevelopment and reduces the isolation of rural areas.²⁰

Increased leisure/tourism and business travel: Maine's \$7.5 billion tourism industry depends on a reliable, safe transportation system.²¹ Approximately 85,000 jobs are tied to the tourism industry, accounting for 13 percent of employment in the state.²² Tourism overnight

visitors and day travelers, whose principle mode of travel is the highway system, account for 27 million trips and directly spend a total of \$4.9 billion annually.²³ The condition and reliability of a region's transportation system impacts the accessibility of activities and destinations such as conferences, trade shows, sporting and entertainment events, parks, resort areas, social events and everyday business meetings. An improved transportation system increases the accessibility of leisure/tourism and business travel destinations, which stimulates economic activity.²⁴

Reduced economic losses associated with vehicle crashes, traffic congestion and driving on deficient roads: When a region's transportation system lacks some desirable safety features, is congested or is deteriorated, it increases costs to the public and businesses in the form of traffic delays, increased costs associated with traffic crashes, increased fuel consumption and increased vehicle operating costs. Transportation investments that improve roadway safety, reduce congestion and improve roadway conditions benefit businesses and households by saving time, lives and money.

Transportation investment creates and supports both short-term and long-term jobs. 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.²⁵

Local, regional and state economic performance is improved when a region's surface transportation system is expanded or repaired. This improvement comes as a result of the initial job creation and increased employment created over the long-term because of improved access,

reduced transport costs and improved safety Highway accessibility was ranked the number one site selection factor in a 2011 survey of corporate executives by [Area Development Magazine](#).

Critical transportation projects that expand capacity and preserve the existing transportation system generate significant economic benefits. Transportation projects that provide additional roadway lanes, expand the efficiency of a current roadway (through improved signalization, driver information or other Intelligent Transportation Systems), or provide additional transit capacity, produce significant economic benefits by reducing congestion and improving access, thus speeding the flow of people and goods.²⁶

Similarly, transportation projects that maintain and preserve existing transportation infrastructure also provide significant economic benefits. The preservation of transportation facilities improves travel speed, capacity, load-carry abilities and safety, while reducing operating costs for people and businesses.²⁷ Projects that preserve existing transportation infrastructure also extend the service life of a road, bridge or transit vehicle and save money by postponing or eliminating the need for more expensive future repairs.²⁸

The [Federal Highway Administration estimates](#) that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.²⁹

Conclusion

Maine's residents, visitors and businesses are faced with numerous transportation challenges every day as they travel to work, go to school, shop, or move products. Eliminating these challenges by improving the condition and efficiency of the state's roads, highways and bridges will be an effective step in growing the state's economy, enhancing quality of life and making Maine an attractive place to live, work and play.

However, without additional transportation funding, many of the projects needed to ease congestion, improve road and bridge conditions and support the state's growing economy will not be completed. It is imperative that Maine adequately fund its system of roads, highways and bridges in order to address the challenges currently faced by the state's residents and businesses.

As Maine looks to build a thriving, growing and dynamic state, it will be critical that it is able to provide a 21st century network of roads, highways and bridges that can accommodate the mobility demands of a modern society.

Endnotes

¹ U.S. Census Bureau. www.census.gov.

² U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2011, 1990. www.fhwa.dot.gov.

³ TRIP calculation based on U.S. Census and Federal Highway Administration data.

⁴ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2011. www.fhwa.dot.gov

⁵ TRIP Analysis of 2011 Federal Highway Administration data.

⁶ Ibid.

⁷ Ibid.

⁸ U.S. Department of Transportation - Federal Highway Administration: National Bridge Inventory 2012.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

¹² National Highway Traffic Safety Administration. 2011 data.

¹³ Ibid.

¹⁴ TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data, 2011.

¹⁵ Bureau of Transportation Statistics, U.S. Department of Transportation. 2007 Commodity Flow Survey, State Summaries.

¹⁶ Ibid.

¹⁷ National Cooperative Highway Research Program. Economic Benefits of Transportation Investment (2002). p. 4.

¹⁸ The Transportation Challenge: Moving the U.S. Economy (2008). National Chamber Foundation. p. 10.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Maine Office of Tourism, 2012 Maine Tourism Highlights.

²² Ibid.

²³ Ibid.

²⁴ The Transportation Challenge: Moving the U.S. Economy (2008). National Chamber Foundation. p. 10.

²⁵ Federal Highway Administration, 2008. Employment Impacts of Highway Infrastructure Investment.

²⁶ The Transportation Challenge: Moving the U.S. Economy (2008). National Chamber Foundation. p. 5.

²⁷ Ibid.

²⁸ Ibid.

²⁹ FHWA estimate based on its analysis of 2006 data. For more information on FHWA's cost-benefit analysis of highway investment, see the 2008 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.