

FUTURE MOBILITY IN MARYLAND:

Meeting the State's Need for Safe and Efficient Mobility

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Founded in 1971, [TRIP](http://www.tripnet.org)® 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

Maryland's extensive system of roadways, bridges and public transit provides the state's residents, visitors and businesses with a high level of mobility. As the backbone that supports the Old Line State's economy, Maryland'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 an unemployment rate of 7.4 percent in December 2010, and with the state's population continuing to grow, Maryland must improve its system of roads, 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 Maryland looks to rebound from the recession, the state will need to enhance its surface transportation system by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient and reliable mobility for residents, visitors and businesses. Making needed improvements to Maryland's roads, highways, bridges and transit 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.

The federal government is an essential source of funding for the ongoing modernization of Maryland's surface transportation system. But the potential for declines in federal transportation revenues will make it more difficult for the state to maintain and improve its surface transportation system.

Approved in February 2009, the American Recovery and Reinvestment Act provided approximately \$566 million in stimulus funding for transportation; \$414 million for highway and bridge improvements and \$152 million for public transit improvements in Maryland. 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 modernize its surface transportation system. Meeting Maryland's need to improve and maintain its system of roads, highways, bridges and transit will require a significant, long-term boost in transportation funding at the federal, state or local levels.

Congress is currently deliberating over a long-range federal surface transportation program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU). SAFETEA-LU was originally set to expire on September 30, 2009. Following a series of short term extensions, the current program now expires March 4, 2011. The level of funding and the provisions of a future federal surface transportation program will have a significant impact on future highway and bridge conditions and safety as well as the level of transit service in Maryland, which, in turn, will affect the state's ability to improve its residents' quality of life and enhance economic development opportunities.

Insufficient roads cost Maryland's drivers a total of \$7 billion every year in the form of traffic crashes, additional vehicle operating costs (VOC) and congestion-related delays.

- A lack of available transportation funding in the future is projected to lead to more deteriorated road and bridge conditions and increased congestion in Maryland's major urban areas. Without additional funds, the state will be unable to complete many needed transportation improvement projects.
- TRIP estimates that Maryland's roadways that lack some desirable safety features, have inadequate capacity to meet travel demands or have poor pavement conditions cost the state's drivers approximately \$7 billion annually in the form of traffic crashes, additional vehicle operating costs and congestion-related delays.
- TRIP has calculated the cost to motorists of driving on roads that are deteriorated, congested and lack some desirable safety features in the Baltimore and Washington, DC metro areas. The following chart shows the cost breakdown for these areas.

	VOC	Congestion	Safety	TOTAL
Baltimore	\$ 603	\$ 1,218	\$ 405	\$ 2,226
Washington, DC	\$ 462	\$ 1,555	\$ 279	\$ 2,296
STATEWIDE	\$1.6 billion	\$3.8 billion	\$1.6 billion	\$7 billion

Without a substantial boost in transportation funding, Maryland will be unable to complete numerous projects to improve the condition and expand the capacity of roads, bridges, highways and public transit, hampering the state's ability to improve mobility and to enhance economic development opportunities in the state.

- Numerous projects throughout the state are needed, but can not move forward under current funding conditions. These projects include, but are not limited to, the following: improvements to the I-95/I-495 Interchange; widening portions of I-70 and I-695; constructing a new bridge on Watkins Mill Road over I-270 in Gaithersburg; widening the I-495 American Legion Bridge; implementing new transit lines (such as the red line and purple line); and installing various pedestrian and bike trails throughout the state.
- Federal spending levels for highways and public transit are based on the current federal surface transportation program, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which was approved by Congress in 2005. Following a series of short-term extensions, the SAFETEA-LU program expires on March 4, 2011.
- To ensure that federal funding for highways and bridges in Maryland and throughout the nation continues beyond the expiration of SAFETEA-LU, Congress needs to approve a new long-term federal surface transportation program by March 4, 2011.
- The Federal Highway Administration estimates that each dollar spent on roads, highway and bridge improvements results in an average benefit of \$5.20 in the form of decreased

vehicle maintenance costs, reduced delays, lower fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.

Population and economic growth in the Old Line State have resulted in increased demands on the state's major roadways and transit systems.

- Maryland's population reached 5.7 million in 2009, an increase of 19 percent since 1990. The state's population is expected to grow another 25 percent by 2030.
- Vehicle travel in Maryland increased 36 percent from 1990 to 2008 – jumping from 40.5 billion vehicle miles traveled (VMT) in 1990 to 55 billion VMT in 2008.
- By 2025, vehicle travel in Maryland is projected to increase by another 30 percent.
- From 1990 to 2009, Maryland's gross domestic product, a measure of the state's economic output, increased by 54 percent, when adjusted for inflation.

Traffic congestion levels are rising as a result of population and economic growth. Traffic congestion can be relieved by projects that increase the efficiency and expand the capacity of a region's system of roads, highways and public transit.

- In 2008, Maryland was ranked eighth in the nation in the share of congested urban Interstates and other highways or freeways, with 55 percent of the state's urban highways carrying a level of traffic that is likely to result in significant delays during peak travel hours.
- The average rush hour trip in the Washington, DC metropolitan area, which includes a significant portion of Maryland's population, takes approximately 30 percent longer to complete than during non-rush hour.
- The average rush hour trip in the Baltimore metropolitan area takes approximately 17 percent longer to complete than during non-rush hour.
- Travel delays are more than just a nuisance for drivers. Congestion costs the average Baltimore motorist \$1,218 each year in lost time and wasted fuel, the fifth highest level in the nation. The average Washington, DC driver loses \$1,555 per year in lost time and wasted fuel as a result of congestion, the second highest level in the nation.

In 2008, 44 percent of major roads in Maryland were in poor or mediocre condition, providing motorists with a rough ride. This includes Interstates, highways, connecting urban arterials and key urban streets that are maintained by state, county or municipal governments.

- In 2008, 26 percent of Maryland's roads were rated in poor condition and 18 percent were rated in mediocre condition.
- 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 Maryland motorist an average of \$422 annually in extra vehicle operating costs – \$1.6 billion statewide. Costs include accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.
- In the Baltimore area, where 46 percent of major roads are in poor condition and an additional 23 percent are in mediocre condition, driving on roads in need of repair costs the average motorist \$603 per year.
- In the Washington, DC metro area, which includes the Maryland suburbs, 31 percent of major roads are in poor condition and 29 percent are in mediocre condition, costing area drivers \$462 each year.
- The functional life of Maryland'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.

Twenty-five percent of bridges in Maryland show significant deterioration or do not meet current design standards. This includes all bridges that are 20 feet or more in length and are maintained by state, local and federal agencies.

- Seven percent of Maryland's bridges were structurally deficient in 2010. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. When necessary, structurally deficient bridges are 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 Maryland's bridges were functionally obsolete in 2010. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.

Maryland's rural traffic fatality rate is significantly greater than the fatality rate on all other roads in the state. Improving safety features on Maryland'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 all fatal and serious traffic accidents.

- Between 2004 and 2008, 3,114 people were killed in traffic accidents in Maryland, an average of 623 fatalities per year. Traffic fatalities declined to 550 in 2009.
- Maryland's traffic fatality rate was 1.07 fatalities per 100 million vehicle miles of travel in 2008.

- The traffic fatality rate in 2008 on Maryland's non-Interstate rural roads was 2.08 traffic fatalities per 100 million vehicle miles of travel, which is nearly two-and-a-half times higher than the traffic fatality rate on all other roads and highways in the state (0.84).
- The cost of serious traffic crashes in which roadway design was likely a contributing factor was approximately \$1.6 billion in Maryland in 2008. In the Baltimore metro area, the cost of traffic crashes totals \$405 per motorist. And in the Washington, DC metro area, traffic crashes cost each driver \$279 per year. The cost of serious crashes includes lost productivity, lost earnings, medical costs and emergency services.
- Several factors are associated with vehicle accidents that result in fatalities, including driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is an important factor in one-third of fatal traffic accidents.
- Where appropriate, highway improvements can reduce traffic fatalities and accidents while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; adding rumble strips, wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; and better road markings and traffic signals.

The efficiency of Maryland's transportation system, particularly its highways, is critical to the health of the state's economy. Businesses are increasingly reliant on an efficient and reliable transportation system to move products and services. Expenditures on highway repairs create a significant number of jobs.

- Annually, \$131 billion in goods are shipped from sites in Maryland and another \$204 billion in goods are shipped to sites in Maryland, mostly by trucks.
- Eighty-one percent of the goods shipped annually from sites in Maryland 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 the deliveries.
- The tonnage of freight transported into, out of, within, and through Maryland is estimated to increase by about 105 percent from 2006 levels by 2035.
- The provision of adequate freight mobility in the state is threatened by a lack of double-stack rail capacity, a shortage of truck parking, increasing demand on rural highway corridors, urban interchange bottlenecks and a need for improved intermodal connections.
- 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.

Two 2010 reports, one by the Treasury Department with the Council of Economic Advisers and the other by a bipartisan group of transportation experts, found that the U.S. is falling far behind internationally in providing a modern transportation system and will need to adopt a more ambitious and focused transportation program to maintain the nation's standard of living. The reports call for increased investment to relieve traffic congestion, improve freight and intermodal access, improve road and bridge conditions, improve traffic safety, and reduce emissions.

The reports found that now is an optimal time to invest in infrastructure because of reduced costs due to the economic downturn and that providing adequate resources to modernize the nation's transportation system will require increased use of innovative funding tools including vehicle-miles-traveled fees, public-private partnerships and capital budgeting.

The findings of the two reports were also supported by the American Association of State Highway and Transportation Officials, in its recommendations for a future federal surface transportation program, which calls for a significant expansion of transit capacity and ridership.

- The report, “An Economic Analysis of Infrastructure Investment” (The Treasury report), was prepared by the U.S. Department of the Treasury with the Council of Economic Advisers.
- The report, “Well Within Reach: America's New Transportation Agenda” (The Miller report), was prepared by a group of the nation's top transportation policy experts chaired by two former U.S. Secretaries of Transportation, Samuel Skinner and Norman Mineta. The group was assembled by the Miller Center at the University of Virginia to develop solutions for the funding and planning challenges that confront the nation's transportation system.
- The Miller report found that the U.S. faces an annual funding shortfall to maintain conditions and traffic congestion levels on its transportation system from between \$134 and \$194 billion and from between \$189 and \$262 billion to improve conditions and reduce traffic congestion.
- The Treasury report found that U.S. infrastructure spending as a percentage of gross domestic product (GDP) has fallen by 50 percent and now accounts for two percent of the nation's GDP. In contrast, China spends about nine percent of its GDP on infrastructure and Europe about five percent.
- The Treasury report found that now is an optimal time to invest in transportation infrastructure because well-designed projects can provide significant, long-term economic benefits, significant needs exist and construction and other costs associated with infrastructure projects are especially low because of high unemployment and a high level of underutilized resources.

Key recommendations of the reports and AASHTO include:

Program format:

- Adopt an integrated approach to transportation planning that includes freight and goods movement and stresses intermodal connectivity (Miller).
- Prioritize projects that provide the greatest returns in terms of future U.S. competitiveness, economic growth and employment (Miller).
- Increase emphasis on urban congestion relief, including adding additional roadway and transit capacity, making the existing system work more efficiently and adopting regional policies that may reduce some travel demand (Miller).
- Improve the delivery of transportation projects by reforming the project planning, permitting and review process to speed actual implementation (Miller).
- Establish a national goal of doubling transit ridership by 2030 as a way to relieve traffic congestion, conserve fuel, reduce emissions and support emergency preparedness (AASHTO).

Funding:

- Transition from utilizing a user fee on motor fuel consumption as the primary source of transportation funding to a user fee based on miles driven (Miller).
- Establish a National Infrastructure Bank (NIB) that would create conditions for greater private sector co-investment in infrastructure. An NIB would also perform rigorous analysis to identify projects with the greatest possible societal and economic benefits (Treasury).
- Save the public money by investing adequately in transportation to reduce delays, vehicle maintenance costs, traffic crashes and vehicle emissions (Miller).
- Adopt a federal capital budget that recognizes that transportation expenditures are an investment and that takes into account future returns on those investments (Miller).

Sources of information for this report include the Maryland Department of Transportation (MDOT), the Maryland State Highway Administration (SHA), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) the Treasury Department, the Council of Economic Advisers, the U.S. Census Bureau of Transportation Statistics (BTS), the American Association of State Highway and Transportation Officials (AASHTO), the National Highway Traffic Safety Administration (NHTSA), and the Texas Transportation Institute (TTI). All data used in the report is the latest available.

Introduction

Maryland's roadways, bridges and public transit form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping and recreation, as well as to technology and research centers, manufacturing plants and thriving industrial zones.

Maryland is struggling to accommodate a growing population and the increased demands put on the state's surface transportation systems. Keeping up with this growth is crucial to providing safe and efficient mobility, while improving the economic livelihood of the state and accommodating future growth.

Maryland currently faces tremendous economic challenges, with unemployment nearly doubling from 3.5 percent in December 2007 to 7.4 percent in December 2010.¹ As Maryland and the nation look to rebound from the recession, the improvement of Maryland's transportation system could play an important role in improving the state'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.

While state and local governments are responsible for maintaining most of Maryland's roadways, bridges and public transit systems, the federal government plays a significant role in funding the repairs and improvements to many of the state's most heavily used roads, highways, bridges and public transit systems. As Maryland faces the challenge of preserving and improving its surface transportation system, the future level of federal highway and transit 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.

This report examines the condition, use and safety of Maryland's roads, highways, bridges and public transit systems, the role of federal funding in the maintenance and improvement of the state's surface transportation system, the cost to Maryland drivers of an inadequate transportation system, and Maryland's future mobility needs.

Sources of information for this report include the Maryland Department of Transportation (MDOT), the Maryland State Highway Administration (SHA), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Treasury Department, the Council of Economic Advisers, the U.S. Census, the Bureau of Transportation Statistics (BTS), the American Association of State Highway and Transportation Officials (AASHTO), the National Highway Traffic Safety Administration (NHTSA), and the Texas Transportation Institute (TTI). All data used in the report is the latest available.

Population, Travel and Economic Trends in Maryland

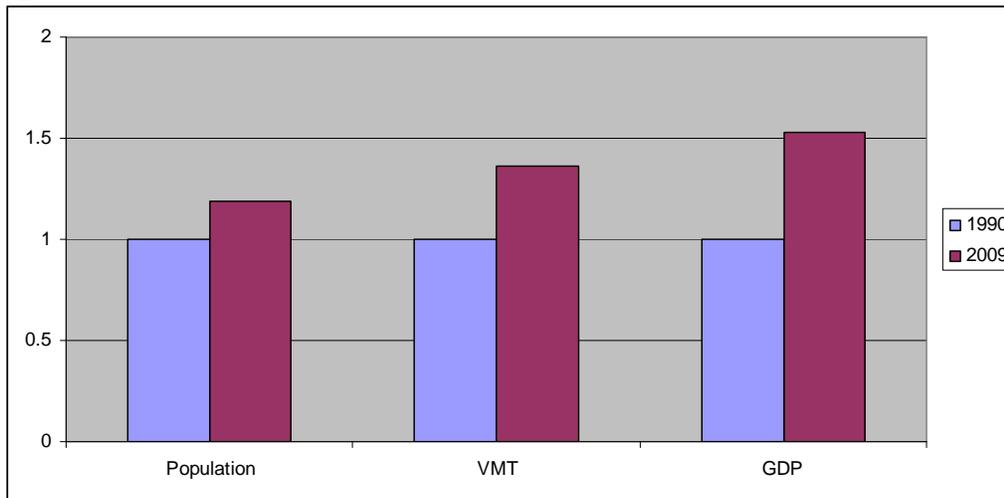
Maryland residents and businesses require a high level of personal and commercial mobility. Continued population and economic growth in the Old Line State has resulted in a significant increase in the demand for mobility as well as an increase in vehicle miles of travel (VMT). To foster a high quality of life in Maryland, it will be critical that the state provide and preserve a safe and modern transportation system that can accommodate future growth in population, vehicle travel and economic development.

Maryland is the fifth most densely populated state in the nation. Its population grew 19 percent between 1990 and 2009, increasing from 4.78 million in 1990 to approximately 5.7 million residents in 2009.² Maryland's population is projected to increase to approximately 7 million residents by 2030.³

Maryland also has experienced significant economic growth since 1990. From 1990 to 2009, Maryland's gross domestic product (GDP), a measure of the state's economic output, increased by 54 percent, when adjusted for inflation.

Despite the recession, Maryland's population and economic growth over the past two decades has resulted in a significant increase in vehicle travel in the state. From 1990 to 2008, annual vehicle miles of travel in Maryland increased 36 percent, from 40.5 billion miles traveled annually to 55 billion miles traveled annually.⁴ Based on population and lifestyle trends, TRIP estimates that travel on Maryland's roads and highways will increase 30 percent by 2025, to approximately 74 billion miles of travel.⁵

Chart 1: Maryland's population, GDP and Vehicle Travel increase 1990-2009 (1 = 1990 level, VMT figures are for 2008).



Source: TRIP analysis of federal data

Condition of Maryland's Roads

The life cycle of Maryland'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.

In 2008, 44 percent of Maryland's major roads were rated in poor or mediocre condition, providing motorists with a rough ride.⁶ Twenty-six percent of Maryland's major roads were rated in poor condition and 18 percent were rated in mediocre condition.⁷ 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. 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.

A desirable goal for state and local organizations that are responsible for road maintenance is to keep 75 percent of major roads in good condition.⁸ In Maryland, 41 percent of the state's major roads were in good condition in 2008.⁹

Chart 2. Pavement conditions in Maryland.

<i>Pavement Rating</i>	<i>Percentages</i>
Poor	26%
Mediocre	18%
Fair	15%
Good	41%

Source: TRIP analysis of Federal Highway Administration Data.

In the Baltimore area, 46 percent of major roads are in poor condition and an additional 23 percent are in mediocre condition. Thirty-one percent of major roads in the Washington, DC metro area, which includes the Maryland suburbs, are in poor condition and 29 percent are in mediocre condition.¹⁰

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.¹¹

As Maryland's roads and highways continue to age, they will reach a point where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

The Costs to Motorists of Roads in Inadequate Condition

TRIP has calculated the additional cost to motorists of driving on roads in poor or unacceptable condition. Roads in poor condition – which may include potholes, rutting or rough surfaces – increase the cost to operate and maintain a vehicle. These additional vehicle operating costs include accelerated vehicle depreciation, additional vehicle repairs, increased fuel consumption and increased tire wear. TRIP estimates that additional vehicle operating costs borne by Maryland motorists as a result of poor road conditions is \$1.6 billion annually, or \$422 per motorist. In the Baltimore area, driving on roads in need of repair costs the average motorist \$603 per year, while drivers in the Washington, DC metro area lose \$462 each year as a result of driving on deteriorated roads.¹²

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.¹³

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 motorist, calculating current vehicle operating costs based on AAA's 2010 vehicle operating costs and then using the HDM model to estimate the additional vehicle operating costs paid by drivers as a result of substandard roads.¹⁴ Additional research on the impact of road conditions on fuel consumption by the Texas Transportation Institute (TTI) is also factored into TRIP's vehicle operating cost methodology.

Bridge Conditions in Maryland

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

In 2010, a total of 25 percent of Maryland's bridges (20 feet or longer) were rated as structurally deficient or functionally obsolete. Seven percent of Maryland's bridges (20 feet or longer) were rated as structurally deficient.¹⁵

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 Maryland's bridges were rated functionally obsolete in 2010.¹⁶ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment with the approaching roadway.

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

Maryland's bridges are aging. Many bridges were built in the 1950s and 1960s, and they are not designed for modern vehicles and trucks, or for the demands placed on them for access.

Maryland has been able to undertake numerous preservation projects but cannot initiate other, critically needed projects, without additional transportation funding.

Traffic Congestion in Maryland

Traffic congestion in Maryland is a growing burden in key urban areas and threatens to impede the state's economic development. Congestion on Maryland's urban highways is growing as a result of increases in vehicle travel and population.

In 2008, 55 percent of Maryland's urban highways were congested, carrying traffic volumes that result in significant rush hour delays, the eighth highest share in the nation.¹⁷ Highways that carry high levels of traffic are also more vulnerable to experiencing lengthy traffic delays as a result of traffic accidents or other incidents.

Traffic congestion in Maryland's largest urban areas is likely to worsen significantly unless the state is able to improve its transportation system. The Washington metro area, which includes a portion of Maryland, is the most congested urban area in the country.¹⁸ The average rush hour trip in the Washington, DC metro area takes approximately 30 percent longer to complete than during non-rush hour. In the Baltimore metro area, the average rush hour trip takes approximately 17 percent longer to complete than during non-rush hour.¹⁹

Travel delays are more than just a nuisance for drivers. Congestion costs the average Baltimore motorist \$1,218 each year in lost time and wasted fuel. The average Washington, DC driver loses \$1,555 per year in lost time and wasted fuel as a result of congestion.

Traffic Safety in Maryland

A total of 3,114 people were killed in motor vehicle accidents in Maryland from 2004 through 2008, an average of 623 fatalities per year.²⁰

Maryland's traffic fatality rate was 1.07 fatalities per 100 million vehicle miles of travel in 2008. The national average is 1.25 for 2008.²¹

Chart 7. Traffic fatalities in Maryland from 2003 – 2007.

<i>Year</i>	<i>Fatalities</i>
2004	643
2005	614
2006	652
2007	614
2008	591
Total	3,114

Source: National Highway Traffic Safety Administration

Maryland's rural, non-Interstate roads have a fatality rate significantly higher than other roads in the state. The traffic fatality rate in 2008 on Maryland's non-Interstate rural roads was 2.08 traffic fatalities per 100 million vehicle miles of travel, which is nearly two and a half times greater than the 0.84 traffic fatalities per 100 million vehicle miles of travel on all other roads and highways in the state.²² In 2008, 37 percent of traffic fatalities in Maryland occurred on rural, non-Interstate routes, while only 19 percent of vehicle travel in the state occurred on these roads.²³

The cost of serious traffic crashes in which roadway design was likely a contributing factor was approximately \$1.6 billion in Maryland in 2008.²⁴ In the Baltimore metro area, the cost of traffic crashes totals \$405 per motorist.²⁵ And in the Washington, DC metro area, traffic crashes cost each driver \$279 per year.²⁶ The cost of serious crashes includes lost productivity, lost earnings, medical costs and emergency services.

Three major factors are associated with fatal vehicle accidents: driver behavior, vehicle characteristics and roadway design. It is estimated that roadway design is an important factor in

one-third of all fatal and serious traffic accidents. Improving safety on Maryland’s roadways 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, 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, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals.

Roads with poor geometry, with 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.²⁷

Chart 8. Reduction in fatal accident rates after roadway improvements.

Type of Improvement	Reduction in Fatal Accident Rates
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

Many different industries have contributed to boosting the Old Line State's gross domestic product by 54 percent since 1990, when adjusted for inflation.²⁸ Maryland is a heavily industrialized state, with a broadly diversified base including information technology, defense and aerospace, biotechnology and medical research, as well as traditional industries such as fishing, agriculture and manufacturing.

The Port of Baltimore is ranked 12th nationally for total dollar value of cargo and 13th nationally for total foreign cargo handled.²⁹ The port is extremely important, not just for Maryland commerce, but also as a conduit of bulk commodities that are shipped to manufacturing centers in surrounding and mid-western states.³⁰

Travel and tourism are also important to Maryland's economy. Visitors to the state spent \$14.5 billion in 2008 - an increase of 3.2 percent over 2007.³¹ Significantly, the vast majority of Maryland's visitors traveled by car, largely from within the state and surrounding states.

All the state's businesses are dependent on an efficient, safe, and modern transportation system, one that will foster continued business diversification and opportunity.

Today's business culture demands that an area have well-maintained and efficient roadways and bridges and 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'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 by accepting customer orders through the Internet. 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.

Highways are vitally important to continued economic development in Maryland. 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.

Every year, \$131 billion in goods are shipped from sites in Maryland and another \$204 billion in goods are shipped to sites in Maryland, mostly by trucks.³² Eighty-one percent of the goods shipped annually from sites in Maryland 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.³³

Trucking is a crucial part of Maryland's economy, as commercial trucks move goods from sites across the state to markets inside and outside the state. Commercial truck travel in Maryland is expected to increase significantly over the next 25 years. The tonnage of freight transported into, out of, within, and through Maryland is estimated to increase by about 105 percent from 2006 levels by 2035.³⁴

The provision of adequate freight mobility in the state is threatened by a lack of double-stack rail capacity, a shortage of truck parking, increasing demand on rural highway corridors, urban interchange bottlenecks and a need for improved intermodal connections.³⁵

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.³⁶

The Federal Highway Administration estimates that each dollar spent on roads, highway and bridge improvements results in an average benefit of \$5.20 in the form of decreased vehicle maintenance costs, reduced delays, lower fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.³⁷

The Funding of Maryland's Surface Transportation System

The construction, repair and upkeep of Maryland's roads, bridges, highways and public transit systems are paid for by local, state and federal governments. Roads and highways are maintained largely by state and local governments, and transit systems are operated largely by local transit agencies.

Maryland's primary surface transportation funding source is the motor fuel tax. The State's 23.5-cent-per-gallon user fee on gasoline has been in effect since 1992, and the 24.3-cent-per-gallon user fee on diesel has been in effect since 1993.

Significant federal funding for highways and transit is provided to both state and local governments. Federal funding for Maryland's highways and bridges comes from the Federal Highway Trust Fund, under funding levels and formulas determined by Congress. The current long-range federal surface transportation program, the Safe, Accountable, Flexible, and Efficient

Transportation Equity Act – A Legacy for Users (SAFETEA-LU), originally scheduled to expire on September 30, 2009, now expires on March 4, 2011 following six short-term extensions. The level of funding and the provisions of a future federal surface transportation program will have a significant impact on future highway and bridge conditions and safety as well as the level of transit service in Maryland.

From 2000 to 2009, Maryland received approximately \$5.8 billion in federal funding for road, highway and bridge improvements, and \$2.1 billion in funding for public transit – a total of approximately \$7.9 billion in federal surface transportation funding during the 10-year period.³⁸

This federal funding is a critical source of revenue for Maryland’s roadways and bridges. Federal funds provide 28 percent of all revenues used by MDOT to pay for road, highway and bridge construction, repairs and maintenance.³⁹

Federal funds also provide 14 percent of the revenue used annually 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.

As a result of this level of federal support, Maryland has been able to complete numerous projects on the state’s highway system, rehabilitate deteriorated roadways and bridges, and expand transit systems and access to improve traffic safety, relieve traffic congestion and enhance economic development opportunities.

Numerous projects throughout the state are needed, but can not move forward under current funding conditions. These projects include, but are not limited to, the following: improvements to the I-95/I-495 Interchange; widening portions of I-70 and I-695; constructing a new bridge on Watkins Mill Road over I-270 in Gaithersburg; widening the I-495 American

Legion Bridge; implementing new transit lines (rail or bus rapid transit); and installing various pedestrian and bike trails throughout the state.

Future Federal Surface Transportation Program

To ensure that federal funding for highways and public transit in Maryland and throughout the nation continues beyond the expiration of the current federal surface transportation program (SAFETEA-LU), Congress will need to approve new long-term federal surface transportation legislation by March 4, 2011.

The American Recovery and Reinvestment Act provides approximately \$414 million in stimulus funding for highway and bridge improvements and \$152 million for public transit improvements in Maryland, a total of \$556 million. This funding can serve 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 improve and enhance its surface transportation system.

Crafting a new federal highway and transit program is taking place while the nation's surface transportation program faces numerous challenges, including significant levels of deterioration, increasing traffic congestion, a high number of traffic deaths and a decline in revenues going into the Federal Highway Trust Fund.

All of these factors 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.

National Reports Highlight Need for Increased Transportation Investment

Two 2010 reports, one by the Treasury Department with the Council of Economic Advisers and the other by a bipartisan group of transportation experts, found that the U.S. is falling far behind internationally in providing a modern transportation system and will need to adopt a more ambitious and focused transportation program to maintain the nation's standard of living. The reports call for increased investment to relieve traffic congestion, improve freight and intermodal access, improve road and bridge conditions and reduce emissions.

The findings of the two reports were also supported by the American Association of State Highway and Transportation Officials (AASHTO), in their recommendations for a future federal surface transportation program, which calls for a significant expansion of transit capacity and ridership.

“An Economic Analysis of Infrastructure Investment” (The Treasury report) was prepared by the U.S. Department of the Treasury with the Council of Economic Advisers.

The report, “Well Within Reach: America's New Transportation Agenda” (The Miller report) was prepared by a group of the nation's top transportation policy experts chaired by two former U.S. Secretaries of Transportation, Samuel Skinner and Norman Mineta. The group was assembled by the Miller Center at the University of Virginia to develop solutions for the funding and planning challenges that confront the nation's transportation system.

The reports concluded that now is an optimal time to invest in infrastructure because of reduced costs due to the economic downturn. The report also found that providing adequate resources to modernize the nation's transportation system will require increased use of

innovative funding tools including vehicle-miles-traveled fees, public-private partnerships and capital budgeting.

In its recommendations for a new federal surface transportation program, AASHTO called for the establishment of a national goal of doubling transit ridership by 2030 as a way to relieve traffic congestion, conserve fuel, reduce emissions and support emergency preparedness.⁴⁰

The Miller report found that the nation faces an annual funding shortfall between \$134 and \$194 billion to maintain conditions and traffic congestion levels on its transportation system. The report also found an annual funding shortfall to improve conditions of America's transportation system and reduce traffic congestion from between \$189 and \$262 billion.⁴¹

The Treasury report found that U.S. infrastructure spending as a percentage of gross domestic product (GDP) has fallen by 50 percent and now accounts for two percent of the nation's GDP. In contrast, China spends about nine percent of its GDP on infrastructure and Europe about five percent.⁴²

The Treasury report found that now is an optimal time to invest in transportation infrastructure because well-designed projects can provide significant, long-term economic benefits, because significant needs exist and construction and other costs associated with infrastructure projects are especially low due to high unemployment and a high level of underutilized resources. The report found that the unemployment rate among those likely to gain employment from infrastructure investment is currently over 15 percent.⁴³ The U.S. Department of Transportation also reports that it was able to complete an additional 2,000 projects with funds from the American Recovery and Reinvestment Act of 2009 as a result of low bids or projects being completed under budget.⁴⁴

The reports included a number of key recommendations for the nation's transportation program to insure that it keeps America's roads, skies, rails and waterways well-funded, in good repair, and functioning with optimal efficiency and safety.

The following are some of the key recommendations from the Miller report.

- ✓ Improved planning and increased investment in state-of-the-art freight transportation facilities and systems would improve the efficiency of the supply chain, improve business efficiency and enhance economic competitiveness. It was recommended that an integrated approach to transportation planning be adopted that includes freight and goods movement and stresses intermodal connectivity.⁴⁵
- ✓ To insure that investments in infrastructure build a foundation for prosperity, the Miller report recommended that a priority be placed on funding projects that provide the greatest returns in terms of future U.S. competitiveness, economic growth and employment.⁴⁶
- ✓ Notwithstanding the recent economic downturn, traffic congestion continues to be a significant burden to the public and businesses. The total annual cost of wasted fuel and lost productivity in the U.S. due to traffic congestion was \$87.2 billion in 2007, the equivalent of \$750 for every U.S. driver.⁴⁷ The Miller report recommends an increased emphasis on urban congestion relief, including adding additional capacity roadway and transit capacity, making the existing system work more efficiently and adopting regional policies that may reduce some travel demand.⁴⁸
- ✓ Just as the nation's roadways are slowed by congestion, the process of planning, winning approval for, and implementing transportation improvements can be stymied by gridlock among the many federal, state and local agencies involved. The Miller report recommended improved delivery of transportation projects by reforming the project planning, permitting and review process to speed actual implementation.⁴⁹
- ✓ Transportation funding mechanisms that rely on fossil fuel consumption are likely to become less reliable as governments actively seek to discourage its use. The Miller report encouraged the beginning of a transition from a user fee on motor fuel consumption as the primary source of transportation funding to a user fee based on miles driven.⁵⁰

There is very little direct private investment in our nation's highway and transit systems due to the current method of funding infrastructure. The Treasury report also recommended the establishment of a National Infrastructure Bank (NIB) that would create conditions for greater

private sector co-investment in infrastructure. An NIB would also perform rigorous analysis to identify projects with the greatest possible societal and economic benefits.

The Miller report called for the adoption of a federal capital budget that would recognize that transportation expenditures are an investment and that takes into account future returns on those investments. An increased investment in transportation would actually save the public money by reducing delays, vehicle maintenance costs, traffic crashes and vehicle emissions, the Miller report found.

Conclusion

Highways ,bridges and transit systems are the backbone of the Old Line State's transportation system. Today, Maryland's surface transportation system is under multiple pressures from aging roadways, bridges and transit components, and increasing population and traffic congestion.

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

Without the federal surface transportation program, Maryland would not have been able to fund key projects on major components of the state's surface transportation network. These projects have supported the state's economic development and created new opportunities for its residents. This progress has slowed in the absence of a strong transportation program to take the place of SAFETEA-LU when it expires March 4, 2011.

The state has an immediate need to move forward with numerous bridge, rehabilitation, expansion and transit projects, but without a substantial level of federal funding, Maryland will be unable to fund dozens of vital projects.

Enhanced federal transportation funding would permit Maryland to upgrade important sections of its Interstate highways, improve traffic safety, replace obsolete bridges and expand transit services statewide. Preservation work, such as rehabilitation and maintenance, performed on Maryland's network of roads and bridges will pay off in future years by protecting the state's past investment in transportation and extending the life of its aging infrastructure.

A modernized highway system in Maryland will help the state accommodate continuing population growth and offer congestion relief. Completing critical, unfunded projects would increase mobility, better support commerce and tourism, enhance economic development, and improve traffic safety statewide, boosting the quality of life for residents and visitors alike.

As the nation looks to rebound from the recession, the U.S. will need to modernize its surface transportation system, improve the physical condition of its transportation network and enhance the system's ability to provide efficient and reliable mobility for motorists and businesses. Making needed improvements to Maryland's roads, highways, bridges and transit could provide a significant boost to the state's economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

The federal stimulus package has provided a helpful down payment on an improved transportation system. However, without a substantial boost in federal or state surface transportation funding, numerous needed projects to expand capacity and upgrade the condition of Maryland'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 the next federal surface transportation program will be a critical factor in whether Maryland is able to reap the benefits of a modern surface transportation system.

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Endnotes

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- ² U.S. Census Bureau annual population estimate.
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- ⁷ Ibid.
- ⁸ Why We Must Preserve our Pavements, D. Jackson, J. Mahoney, G. Hicks, 1996 International Symposium on Asphalt Emulsion Technology.
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