

MAKING THE GRADE IN NEW YORK:

An Analysis of the Ability of New York's Transportation System to Meet the State's Need for Safe and Efficient Mobility

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

Executive Summary

New York’s extensive system of roads and bridges provides the state’s 19 million residents and its visitors with a high level of mobility. As the backbone of New York’s surface transportation system, roads and bridges play a central role in the state’s economy. New York’s extensive highway transportation system enables the state’s residents and visitors to go to work, visit family and friends, move goods to market, and frequent tourist attractions.

It is critical that New York develops and maintains a modern transportation system that can accommodate future growth in population, vehicle travel and economic development. Improving and maintaining the condition of the state’s roads and bridges, as well as modernizing New York’s key highways, is critical in providing the state’s residents with a high quality of life. This report looks at the condition, traffic congestion levels, traffic safety rates and the unmet funding needs of major roads and highways in New York.

TRIP has assigned the following letter grades to the components comprising New York’s highway system:

	GRADE	COMMENT
Roads	C-	<i>More than one-third of New York’s major roads and highways have pavements in poor or mediocre condition. In 2003 (the latest year for which data is available), 18 percent of New York’s roads were rated in poor condition, and an additional 16 percent was rated in mediocre condition.</i>
Bridges	C-	<i>A total of 37 percent of New York’s bridges (20 feet or longer) are in substandard condition. Twelve percent of New York’s bridges are rated as structurally deficient and 25 percent are functionally obsolete.</i>
Congestion	D+	<i>Thirty-four percent of the state’s major urban roads are congested. Vehicle travel in New York increased 26 percent from 1990 to 2002, creating increased stress on the state’s roads. The average daily one-way commute in New York increased from 28.6 minutes in 1990 to 31.7 minutes in 2000. As a result, the average commuter in New York spent an additional 26 hours a year in traffic in 2000 –more than three working days – than he or she did in 1990. With a 40 percent increase in vehicle travel anticipated in the state by 2025, traffic congestion will likely worsen unless the state significantly improves its transportation system.</i>
Safety	C+	<i>New York’s traffic fatality rate of 1.10 fatalities per 100 million vehicle miles of travel (VMT) in 2003 is lower than the national average of 1.48 fatalities per 100 million VMT. An average of 1,529 people were killed annually in traffic accidents from 1999 through 2003. Roadway safety features such as widened lanes, added or improved medians, improved intersection design, paved shoulders and added rumble strips can reduce the number of traffic fatalities and serious accidents.</i>

Road conditions in New York are well below desirable standards. More than one-third of the state's major roads and highways have pavements in poor or mediocre condition.

- Eighteen percent of New York's major roads are rated in poor condition, and an additional 16 percent are in mediocre condition. This includes Interstates, highways, connecting urban arterials, and key urban streets that are maintained by state, county and municipal governments.
- Nationwide, 13 percent of major roads are rated in poor condition and 21 percent are rated in mediocre condition.
- Forty-six percent of New York's major roads are in 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.

Bridge conditions in New York are below desirable standards. New York ranks sixth in the nation in the percentage of bridges that are in substandard condition. This includes all state, local and municipal bridges 20 feet and longer.

- Approximately 12 percent of New York's bridges are rated as structurally deficient, showing significant deterioration to decks and other major components.
- Twenty-five percent of New York's bridges are functionally obsolete. These bridges no longer meet modern design standards for safety features such as lane widths or alignment with connecting roads or are no longer adequate for the volume of traffic being carried.
- Nationwide, 13 percent of bridges are rated as structurally deficient, and an additional 13 percent are functionally obsolete.
- Bridge deficiencies have an impact on mobility and safety within the state. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid these bridges. Narrow bridge lanes, inadequate clearances and poorly aligned bridge approaches reduce traffic safety. Redirected trips lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Improving safety features on New York's roads and highways would result in a decrease in traffic fatalities in the state. Roadway design is an important factor in approximately one-third of fatal and serious traffic accidents.

- An average of 1,529 people were killed annually in New York in traffic accidents over the last five years.

- New York's traffic fatality rate in 2003 was 1.10 fatalities per 100 million vehicle miles of travel. The national average is 1.48 fatalities per 100 million vehicle miles of travel.
- Highway improvements such as removing 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 can reduce traffic fatalities and accidents while improving traffic flow to help relieve congestion.
- The Federal Highway Administration has found that every \$100 million spent on needed highway safety improvements will result in 145 fewer traffic fatalities over a 10-year period.

Traffic congestion levels in New York are rising as vehicle travel on the state's roadways is increasing faster than additional roadway capacity is being added. Increases in population and vehicle travel have placed additional stress on the state's highway transportation system. Significant growth in New York's population and vehicle travel have far outpaced the amount of new road capacity being added.

- New York's population reached 19.2 million in 2002, an increase of approximately seven percent since 1990. New York's population is projected to increase another 12 percent by 2025, climbing to 19.8 million residents.
- Vehicle travel on New York's major highways increased by 26 percent from 1990 to 2003 – jumping from 107 billion vehicle miles traveled in 1990 to 135 billion vehicle miles traveled in 2003.
- TRIP estimates that vehicle travel in New York will increase by 40 percent by the year 2025 to 189 billion miles annually.
- More than one-third (34 percent) of New York's urban Interstates and other highways or freeways are considered congested, because they carry a level of traffic that is likely to result in delays during peak travel hours.
- The level of congested urban roadways has increased 17 percent from 1995, when 29 percent of the state's urban highways and freeways were rated as congested.
- Commute times in New York have increased from 1990 to 2002. The average daily one-way commute increased from 28.6 minutes in 1990 to 31.7 minutes in 2002. As a result, the average commuter in New York in 2000 spent an additional 26 hours a year in traffic – more than three full working days – than he or she did in 1990.

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

- 92 percent of the \$290 billion worth of commodities delivered annually to and from sites in New York are transported on the state's highways.
- Commercial trucking is projected to increase 44 percent in New York by 2020.
- Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient transportation system.
- Every \$1.00 spent on street and highway improvements results in \$5.40 in economic benefits, according to the Federal Highway Administration.
- Businesses have responded to improved communications and greater competition by moving from a push-style distribution system, which relies on low-cost movement of bulk commodities and large-scale warehousing, to a pull-style distribution system, which relies on smaller, more strategic and time-sensitive movement of goods.

A significant increase in federal, state and local transportation funding would allow New York to accelerate key transportation projects and improve conditions and service statewide. If transportation funding remains at current levels, however, many important improvements and projects will be delayed, and conditions and service will worsen, hampering New York's economic development.

- With a substantial increase in federal, state and local transportation funding, New York would be able to move forward with numerous transportation projects that would help improve road and bridge conditions, relieve traffic congestion and improve traffic safety. These projects are crucial to the state's ability to provide more efficient traffic flow for motorists and commercial truckers, which would help improve economic productivity and boost economic growth.
- In 1998, Congress approved the Transportation Equity Act for the 21st Century (TEA-21), the six-year federal surface transportation legislation that provided federal funding for New York's transportation program.
- Congress has passed several short-term extension of the legislation, the latest of which will expire May 31, 2005.
- The Senate has approved a six-year, \$318 billion reauthorization of the legislation, while the Bush Administration has proposed spending \$256 billion over six years. The House of Representatives has approved spending \$275 over the life of the legislation.

Sources of information for this study include the U.S. Department of Transportation, Federal Highway Administration (FHWA), the U.S. Census Bureau, the National Highway Traffic Safety Administration (NHTSA), the National Bridge Inventory (NBI), the Bureau of Transportation Statistics (BTS), the Texas Transportation Institute (TTI), and the New York Department of Transportation (NYDOT).

Introduction

New York's system of roads and bridges provides the state's 19.2 million residents and visitors with a high level of mobility. As the backbone of New York's surface transportation system, roads and bridges play a central role in the state's economy and enable residents and visitors to go to work, visit family and friends, move goods to market, and frequent tourist attractions.

The continued modernization of New York's roads, bridges and public transit systems is crucial to providing a safer, more efficient transportation system, while improving the economic livelihood of the state and accommodating future growth. A significant increase in state, local and federal transportation funding would help New York undertake numerous critical road, bridge and public transit projects to improve road and bridge conditions, relieve traffic congestion, and reduce fatal traffic accidents. These projects are designed to improve traffic flow and make driving safer, ultimately improving the state's level of mobility. As travel on New York's surface transportation system becomes more efficient, personal and commercial productivity will increase, boosting economic development statewide.

This report looks at the condition, use, safety and funding of New York's roads and bridges, as well as the state's ability to meet future mobility and traffic safety needs. Sources of information for this study include the U.S. Department of Transportation, Federal Highway Administration (FHWA), the U.S. Census Bureau, the National Highway Traffic Safety Administration (NHTSA), the Texas Transportation Institute (TTI), the National Bridge Inventory (NBI) and the New York Department of Transportation (NYDOT).

Population and Travel Trends in New York

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

New York's population reached 19.2 million people in 2003, an increase of approximately seven percent since 1990. New York's population is expected to increase another 12 percent by 2025, climbing to 19.8 million residents.¹

Steady population and economic growth in New York have resulted in increased vehicle travel in the state. From 1990 to 2003, annual vehicle miles of travel (VMT) increased by 26 percent, from 107 billion annual VMT to 135 billion VMT.² Vehicle travel in New York is expected to increase by another 40 percent by 2020 to 189 billion VMT.

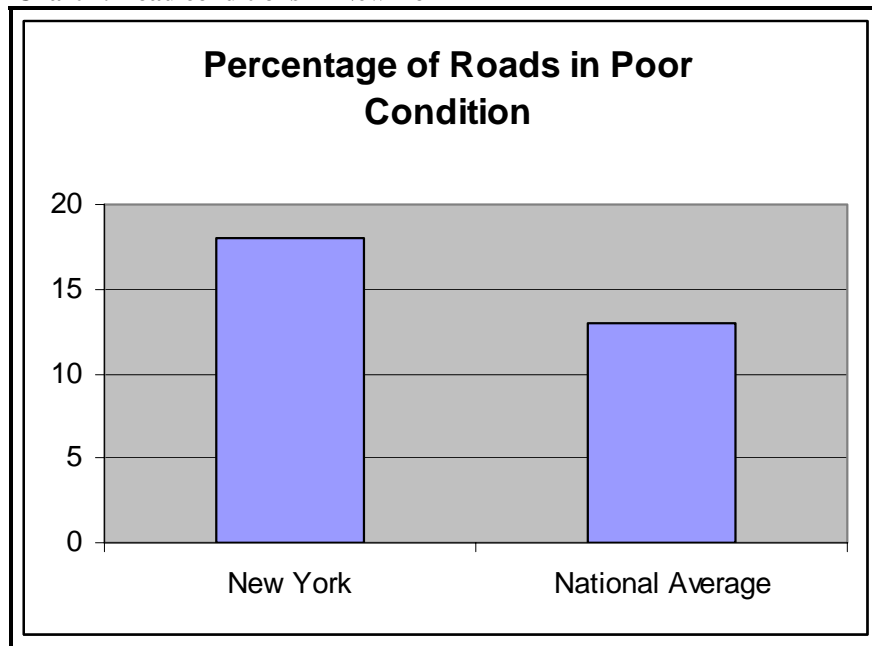
Condition of New York's Roads

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

In 2003 (the latest year for which data is available), 18 percent of New York's roads were rated in poor condition, and an additional 19 percent were rated in mediocre condition³.

Nationwide, 13 percent of major roads are rated in poor condition. Roads rated poor are badly cracked or broken. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed.

Chart 1. Road conditions in New York



Source: TRIP analysis of Federal Highway Administration data

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.⁴ In New York, 46 percent of roads were rated in good condition in 2003.

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.⁵

Bridge Conditions in New York

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

Chart 2. Bridge Conditions in New York

BRIDGE CONDITION	NUMBER OF BRIDGES	PERCENTAGE OF BRIDGES
Structurally Deficient	2,136	12%
Functionally Obsolete	4,272	25%
Total Deficient Bridges	17,382	37%

Source: National Bridge Inventory

In 2003, the latest year for which data is available, 12 percent of New York's bridges (20 feet or longer) were rated structurally deficient. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Approximately 25 percent of New York's bridges (20 feet or longer) were functionally obsolete in 2003.⁶ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.

Traffic Safety in New York

There are three major factors 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 fatal traffic accidents. In 2003, there were 1,491 fatalities on New York's roads – one person killed approximately every six hours. New York's traffic fatality rate per 100 million vehicle miles of travel was 1.10 in 2003, lower than the national average of 1.48.⁷

An average of 1,529 people were killed annually in motor vehicle accidents in New York from 1999 through 2003, according to the National Highway Transportation Safety Administration.⁸

Improving safety on New York's roads and highway system can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and, a variety of improvements in roadway safety features. Roadway improvements such as adding turn lanes, removing obstacles, adding or improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals could reduce the severity of serious traffic crashes. The Federal Highway Administration has found that every \$100 million spent on needed highway safety improvements will result in 145 fewer traffic fatalities over a 10-year period.⁹

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:

Chart 3. Reduction in fatal accident rates after roadway improvements¹⁰

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

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

Traffic Congestion in New York

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

In 2003, the latest year for which data is available, more than one-third – 34 percent – of New York's urban highways were congested, carrying traffic volumes that result in significant rush hour delays.¹¹ These routes are considered congested because the levels of traffic they carry are likely to cause delays during peak travel hours, as a result of traffic levels in excess of what the highway can carry without experiencing delays. Highways that carry high levels of traffic are also more vulnerable to experiencing significant traffic delays as a result of traffic accidents or other incidents.

Growing urban traffic congestion is also contributing to longer commute times in New York. Between 1990 and 2000, commute times in the state steadily increased, according to the

U.S. Census Bureau. The average daily one-way commute in New York increased from 28.6 minutes in 1990 to 31.7 minutes in 2000. As a result, the typical New York commuter in 2000 spent on average an additional 26 hours a year in traffic – more than three full working days – than he or she did in 1990.

Importance of Transportation to Economic Growth

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 greater necessity to cut costs with a variety of innovations including just-in-time delivery, an increase in 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 away from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

A recent report published by the University of California has found a critical shift is occurring in the logistic practices of American producers.¹² The traditional model has featured plants located in large urban regions with adjoining warehouses to store commodities prior to shipment. But with the significant increase in foreign trade, along with the increased difficulty of locating plants and warehouses in congested and more expensive large urban areas, businesses

are moving to large distribution centers to process inbound and outbound shipments. These distribution centers are increasingly moving to regions where land is cheaper, sufficient labor is available and most importantly, a less congested system of highways is available. These large centers are responsible for quickly processing incoming commodities and preparing them for delivery on outgoing trucks. The high volume and time sensitivity of these transactions typically require more frequent movement of smaller loads by truck, vans and planes.

The report found that “as better communications brings faster, more reliable, and more efficient handling and movement of goods, competition requires freight companies to be fast, flexible, precise and cost-sensitive.”¹³

A comprehensive 2002 Transportation Research Board report on the adequacy of U.S. freight movement capabilities found that a region’s ability or failure to provide a transportation system that minimizes traffic congestion and provides reliable freight movement has a significant impact on whether jobs are created locally or are shifted elsewhere. The report found that “workplaces and residences will move away from congestion within metropolitan areas and from more congested to less congested regions within the United States. Some production will move from the United States to other countries if congestion costs cause the United States to lose comparative advantage in some industries.”¹⁴

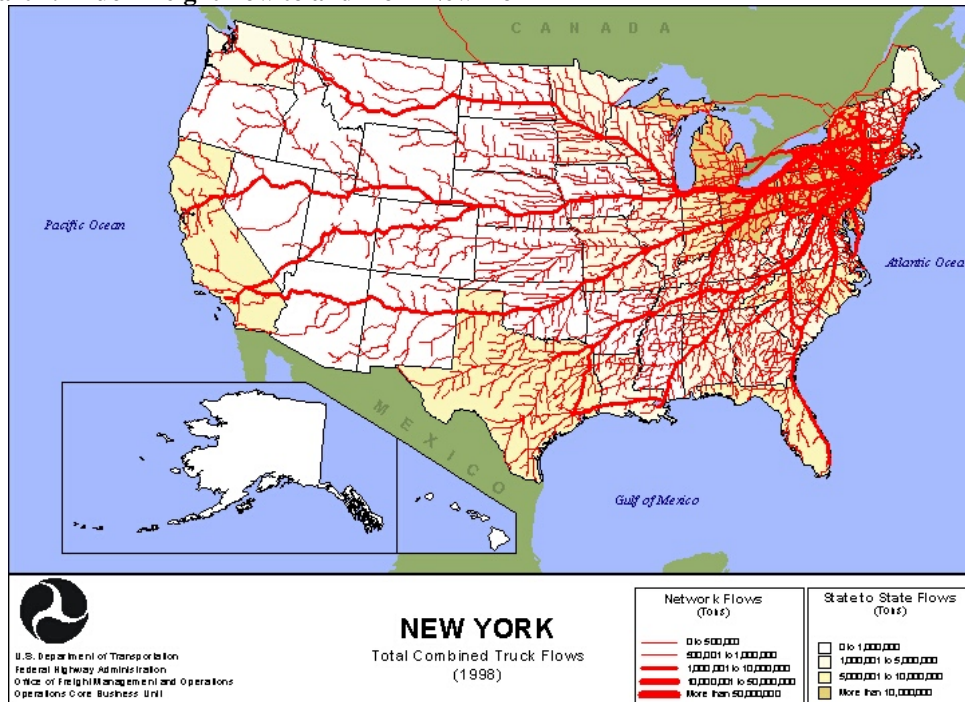
Highways are vitally important to continued economic development in New York. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to market to meet this demand, a process that adds to truck traffic on the state’s highways and major arterial roads. An analysis of commodity transport by the U.S. Bureau of Transportation Statistics (BTS) underscored the economic importance of New York’s road system. The BTS

report found that in New York, 92 percent of the \$290 billion in products shipped annually to and from sites in the state are transported on highways.¹⁵

Trucking is a crucial part of New York’s economy, as commercial trucks move goods from sites across the state to markets inside and outside the state. Commercial truck travel in New York is expected to increase over the next two decades. Based on federal projections, TRIP estimates that commercial trucking will increase by 44 percent in New York by the year 2020.¹⁶

The following map illustrates the truck freight traffic flows in New York, showing the volume levels along specific highways (indicated by the width of the route). The chart includes truck freight traffic flows for international and domestic freight movement, both imports and exports.

Chart 4. Truck freight flow to and from New York¹⁷



Source: Office of Freight Management and Operations, Federal Highway Administration

Expanding the current transportation system and improving roads and bridges also impacts the state's economy by providing jobs and helping to stimulate the local economy. The Federal Highway Administration estimates that every \$100 million spent on highway construction creates approximately 4,200 jobs.¹⁸ This includes both construction jobs and jobs in the related engineering, design and mining fields as well as general jobs in the local economy as a result of the spending generated by the increase in local wages.¹⁹

In addition, the Federal Highway Administration has found that every dollar spent on street and highway improvements results in \$5.40 in economic benefits in the form of reduced delays, improved safety and reduced vehicle operating costs.²⁰

Highway Funding in New York

With a significant increase in federal, state and local transportation funding, New York would be able to complete or accelerate the progress of needed highway transportation projects. These projects would help relieve traffic congestion, improve the condition of the transportation system and improve traffic safety. These projects are critical to the state's ability to provide more efficient traffic flow for motorists and commercial truckers, which would help improve economic productivity and boost economic growth.

In 1998, Congress approved the Transportation Equity Act for the 21st Century (TEA-21), the federal surface transportation legislation that provided federal funding for New York's transportation program over the six-year life of the bill. TEA-21 expired on September 30, 2003 and Congress has approved a series of short-term extension of the legislation, the latest of which will expire on May 31, 2005.

The Senate has approved a six-year, \$318 billion reauthorization of the legislation, while the Bush Administration has proposed spending \$256 billion over six years.²¹ The House of Representatives has approved a \$275 billion dollar reauthorization of the legislation.

Conclusion

It is critical that New York develop and maintain a modern transportation system that can accommodate the state's tremendous growth in population, vehicle travel and economic development. Further modernization of New York's system of roads, bridges and public transit is crucial to providing a safer, more efficient transportation system, while improving the economic livelihood of the state's residents.

A significant increase in federal, state and local transportation funding would help New York undertake numerous critical road, bridge and public transit projects to relieve traffic congestion and reduce traffic fatalities. These projects are designed to improve traffic flow and make driving safer, and help the state accommodate increasing levels of vehicle travel. As travel on New York's surface transportation system becomes more efficient, personal and commercial productivity will increase, boosting economic development statewide.

Endnotes

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