

TRANSPORTATION—Are We There Yet?

The Bottom Line Report—2009

transportation

bottom line



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- An annual investment of \$166 billion for **highways and bridges**, between 2010 and 2015, is necessary to improve the condition and performance of the system, given an expected rate of travel growth of 1.4 percent per year.
- If travel growth is held to about 1.0 percent a year, which would help reduce greenhouse gas emissions, then needed investment to **improve the highway system** would come to \$132 billion per year.
- In 2006, **highway capital investment** from all levels of government totaled \$78.7 billion, according to FHWA.
- An annual investment of \$46 billion for **public transportation** is necessary to improve system performance and condition, given an expected 2.4 percent annual growth in ridership.
- If **transit ridership growth** rises to 3.5 percent, the level that would double ridership in 20 years which would also be helpful in reducing greenhouse gas emissions, investment in public transportation would have to increase to \$59 billion per year.
- In 2006, **transit capital investment** from all levels of government totaled \$13.3 billion, according to APTA.
- The model-based investment estimates do not currently address all needs. Additional **annual highway requirements** total over \$13 billion, including: More than \$7 billion in environmental mitigation costs; \$2.6 billion in highway operations costs; \$1.2 billion in safety program costs; and \$1.6 billion in highway security costs.
- Between 1995 and 2006, **highway travel**, measured in vehicle miles traveled (VMT), increased from 2.4 trillion to 3 trillion. By late 2008, because of high fuel prices and the economic downturn, VMT had declined to 2.9 trillion.
- In 2006, the **value of freight transported** in America was \$15 trillion. Freight volumes are expected to grow by 80 percent by 2035.

glance

- In 2006, **annual passenger miles** traveled on America's public transportation system reached 52.15 billion. Between 1995 and 2007, transit ridership increased from 7.8 billion to 10.3 billion trips.
- Between 1980 and 2005, **international container traffic** through United States ports grew six-fold. In 2006, 42 million containers were shipped. By 2020, the number of containers moving through our ports could reach over 100 million.
- The **travel and tourism industry** generated \$700 billion in 2006. It is the number one industry in three states, and is in the top ten in all but two states.
- 13 million people, about 10 percent of the nation's work force, are **employed in transportation jobs**.
- **Each billion dollars** of federal highway construction investment supports nearly 35,000 jobs.
- Since 1950, when our nation had 150 million people, **our population has doubled** to 305 million and our road system has grown by 20 percent from 3.3 million miles to 4 million miles. Over the next 50 years our population is expected to grow by another 150 million.
- The **number of motor vehicles** in the United States has increased from around 65 million in the mid-1950s to more than 240 million today. Those vehicles traveled about 500 billion miles per year in 1950 and now travel approximately 3 trillion miles.
- While overall population grew by 5 percent from the year 2000 to 2005, the **population over 55** grew by 13 percent to 67 million.
- Over 41,000 people **died on the nation's highways** in 2007.



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NCHRP Project 20-24(54)G AASHTO Bottom Line Report Support

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FOREWORD

2009 will be a pivotal year for the future of America. The 111th Congress and the new Administration will be called upon to craft legislation that will put in place the surface transportation programs essential to the nation's economic recovery and quality of life. This will take place against a backdrop in which the American public is rightly demanding new accountability and reform in the use of their transportation dollars.

Many issues must be addressed in the coming legislative debate:

- Investing in highway and transit infrastructure to stimulate economic recovery;
- Sustaining the solvency to the Federal Highway Trust Fund;
- Redressing dramatically higher costs of highway and transit construction;
- Addressing the transportation impacts on global climate change;
- Reconstruction needs of an aging transportation system;
- Reducing congestion on highways;
- Increasing capacity for highways and public transportation; and
- Maintaining international competitiveness.

This comprehensive assessment of the nation's surface transportation needs provides a definitive base of information to assist in making critical decisions. It is based upon the forecasting models used by the Federal Highway Administration, and supplemented with additional research to incorporate areas not fully addressed by those models. The result is the most comprehensive analysis of the nation's transportation investment needs now possible.



John Horsley

A handwritten signature in black ink that reads "John Horsley". The signature is stylized and fluid, with a long, sweeping underline that extends below the text.

Executive Director
American Association of State Highway and Transportation Officials



KEY FINDINGS

Transportation in America has come to a breaking point. Drivers experience the frustration of congestion and lost hours stuck in traffic. Shippers add extra time to delivery schedules, and then worry if goods will arrive “just in time.” Families bear untold grief at the loss of a son or daughter in a tragic accident. Critics wonder why can’t this be fixed.

The answer is, it can. By investing in America’s transportation system, the nation will not only solve the deficiencies that plague us, but also lay a sound foundation for a revitalized economy equipped to meet a growing and changing society.

Highway Investment Requirements

The Federal Highway Administration (FHWA) reports that since the mid 1990s, highway travel in the nation has grown just under 12 percent. After growing from 2.4 trillion vehicle miles traveled (VMT) in 1995 to over 3 trillion VMT in 2007, because of record high fuel prices and the decline of the economy VMT declined to 2.9 trillion by late 2008.

Future highway travel demand will depend on many factors. The U.S. population is expected to grow from 305 million in 2005 to over 420 million by 2050. Freight shipped by truck is expected to nearly double in the next 20 years. Passenger vehicle demand is expected to parallel population growth, which is increasing around one percent per year. Truck freight demand is expected to parallel economic growth, which is expected to increase between two and three percent per year. While VMT grew at over two percent annually during the last two decades, over the next twenty years it is expected to grow between 1.0 percent to 1.4 percent per year as many of the factors that determine VMT stabilize.

To estimate future highway and bridge investment needs, this report projects two scenarios based upon anticipated growth in travel, a 1.4 percent growth rate, and a policy-based 1.0 percent annual growth rate which would be expected to yield significant progress in reducing transportation’s share of greenhouse gas emissions.

Two Highway Investment Scenarios

Growth Rate of VMT per Year	Cost to Improve Highways (2006 Dollars)
1.4 Percent Annual Growth	\$166 billion
1.0 Percent Annual Growth	\$132 billion

At a 1.4 percent growth rate in VMT, annual average investment requirements for highways and bridges total **\$166 billion**. If travel growth is held to a 1.0 percent annual VMT growth rate, the investment requirements come to **\$132 billion**. Both these levels are significantly higher than the **\$78 billion** invested in highway capital improvements by all levels of government in 2006. If highway investment were increased to the levels indicated in either of the “cost to improve” scenarios, drivers would see smoother roads, improved highway speeds, a reduction in delays, fewer congested miles, and reduced cost.

Public Transportation Investment Requirements

The American Public Transportation Association (APTA) reports that since the mid-1990s, public transportation ridership in the nation has grown 32 percent, from 7.8 billion trips annually in 1995 to 10.3 billion trips in 2007.

Future ridership growth will depend on factors such as changes in fuel prices, housing and commercial development patterns, employment growth, the relative health of metropolitan areas where public transportation plays a large role, and overall economic growth. The level of investment provided to maintain the current transit system and the level of investment made in system expansion will also affect potential ridership.

Projected investment needs were calculated for two scenarios:

- A continued 2.4 percent increase, the average annual growth between 1995 and 2007; and
- A 3.5 percent annual growth, which would result in doubling of ridership in 20 years, which is a goal that has been adopted by AASHTO's Board of Directors.

Average Annual Transit Capital Requirement (2006 Dollars)

Improve Physical Conditions, Improve Service Performance

Needs Component	Replacement/ Rehabilitation of Existing Assets	Transit: Cost to Improve Condition and Performance	
		2.4% Annual Growth	3.5% Annual Growth
Total Needs	\$18 billion	\$46 billion	\$59 billion

Additional Costs for the Future

- The transportation models used to develop the estimates for highways and transit, shown above, do not currently address all investment requirements. Based on recent research, **\$13 billion** in additional costs have been identified. These include more than \$7 billion in environmental mitigation costs; \$2.6 billion in highway operations costs; \$1.2 billion in safety program costs; and \$1.6 billion in highway security costs. APTA has identified capital needs for transit security which were likewise not addressed by the modeling forecasts.

It is our hope that in the future these factors can be incorporated in the cost estimation techniques used by the transportation models. These areas of costs not accounted for in current modeling are detailed in the final section of this report.

THE VALUE OF TRANSPORTATION INVESTMENTS

Whether it is connecting the nation's metropolitan economic centers or ensuring that a school bus arrives safely, transportation is vital to every aspect of American life. This section addresses many of the functions transportation serves, and also analyzes how the transportation system must change with a changing nation.

Transportation and Employment

Transportation and employment are inextricably linked. The vast majority of America's wage earners must travel to a job site, whether by highways or public transportation. Good transportation expands job opportunities—a benefit for workers; and expands access to the labor pool—a benefit for industry. Over 13 million workers nationwide were engaged in transportation-related employment in 2006, about 10 percent of America's total employment of 136 million.

Highway Construction Generated Employment¹

Of particular importance in periods of significant unemployment is the power of transportation construction investment to generate jobs. Every billion dollars of federal highway investment supports nearly 35,000 jobs. The FHWA has developed a new computer model to estimate the employment generated by highway construction investment in three components:

- **Construction-Oriented Employment**—All those jobs created by the hiring of firms to do construction or who produce direct inputs (e.g., paving materials) to the construction project.
- **Supporting Industry Employment**—Includes employment in firms that provide inputs to the firms that provide direct inputs (e.g., production of steel that goes into guardrail).
- **Induced Employment**—Includes the jobs generated by the consumption expenditures of the job-holders in the first two categories (e.g., their groceries, housing, and other purchases).

Jobs Generated per Billion Dollars of Federal Investment

Jobs Person Yrs	2007 Estimates
Direct	11,920
Supporting	5,400
Induced	17,450
All	34,770

The model assumes state matching spending of 20 percent for federal dollars, for a total of \$1.25 billion.

¹ There has not been a comparable revision of transit job estimates in this reauthorization cycle thus far, but it can be assumed that the transit job estimates will parallel the new highway estimates as they did the earlier work.

FREIGHT

Freight movement in the United States has seen prodigious growth in recent decades and accommodating this increase will be a key challenge of the coming authorization legislation. Expectations are that freight movements, as measured in tons, will grow by approximately 80 percent by 2035, with air freight and air/truck freight flows forecast to quadruple. The overall value of goods shipped is forecast to nearly triple in the period, indicating a growing emphasis on the speed and reliability. While the nation is currently experiencing a recession, the economy is expected to rebound. Growth expectations for the future indicate greater distribution and consumption of goods by businesses and households.

Overall forecasts of freight flows by all modes in the period from 2006 to 2035 by value are shown in the table below. Overall values of goods shipped are expected to grow in the range of 3 to 3.5 percent per year, contrasted to the forecast of tonnage growth of around 2 percent per year. Truck flows comprise about 60 percent of total tonnage now and are forecast to maintain that share in the future, with approximately two-thirds of the domestic flows by truck.

Forecasts of Freight Value Shipped by Mode (Billions of Dollars per Year)

Category	Year 2006	Year 2035
Truck	\$9,765	\$23,767
Rail	\$430	\$702
Water	\$102	\$151
Air, Air and Truck	\$1,048	\$5,925
Intermodal	\$2,096	\$8,966
Pipeline and Unknown	\$1,494	\$2,357
Total	\$14,935	\$41,869

INTERNATIONAL TRADE

Freight has also grown as a result of increases in international trade. Between 1980 and 2005, container traffic through United States ports grew six-fold. In 2006, nearly 42 million containers were shipped. By 2020, the number of containers shipped through America's ports could exceed 100 million. A significant part of the growth in freight shipments has been in Mexican and Canadian trade, which has increased substantially since implementation of the North American Free Trade Agreement (NAFTA) in 1994. While Canada and Mexico have for decades been our major trading partners, in 2006 trade with China surpassed that with Mexico.

TRAVEL AND TOURISM

The Travel Industry Association estimated that travel and tourism in the United States generated \$700 billion in 2006, with about \$90 billion of that amount from foreign visitors. Travel and tourism is the number one industry in three states, as measured by employment, and among the top ten industries in all but two states.

- Roughly \$180 billion of total spending is estimated to be in transportation services.
- Recent traffic volume data indicate that about 57 million international visitors came to the United States in 2007, up 11 percent over 2006, with roughly 18 million from Canada, 15 million from Mexico, and 24 million from overseas.