

Introduction

This is the eighth in a series of combined documents prepared by the U.S. Department of Transportation (DOT) to satisfy requirements for reports to Congress on the condition, performance, and future capital investment needs of the Nation's highway and transit systems. This report incorporates highway, bridge, and transit information required by Section 502(h) of Title 23, United States Code (U.S.C.), as well as transit system information required by Section 308(e) of Title 49, U.S.C. Beginning in 1993, the Department combined two separate existing report series that covered highways and transit to form this report series; prior to this, 11 reports had been issued on the condition and performance of the Nation's highway systems, starting in 1968. Five separate reports on the Nation's transit systems' performance and conditions were issued beginning in 1984.

This *2008 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* report to Congress (C&P report) draws primarily on 2006 data. The 2006 C&P report, transmitted on February 12, 2007, was based primarily on 2004 data.

Report Purpose

This document is intended to provide decision makers with an objective appraisal of the physical conditions, operational performances, and financing mechanisms of highways, bridges, and transit systems based both on the current state of these systems and on the projected future state of these systems under a set of alternative future investment scenarios. This report offers a comprehensive, data-driven background to support the development and evaluation of legislative, program, and budget options at all levels of government. It also serves as a primary source of information for national and international news media, transportation associations, and industry.

This C&P report consolidates conditions, performance, and financial data provided by States, local governments, and mass transit operators to provide a national-level summary. Some of the underlying data are available through the DOT's regular statistical publications. The future investment scenario analyses are developed specifically for this report and provide national-level projections only.

Report Organization

This report begins with a "Highlights" section that lists key findings. These findings focus on changes in various indicators since 1997, the last year prior to the enactment of the Transportation Equity Act for the 21st Century (TEA-21), which authorized Federal highway and transit funding for 1998 through 2003. TEA-21 was followed by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which authorized funding from 2005 to 2009. The indicators, therefore, reflect the state of highway and transit conditions and performance during the TEA-21 and early SAFETEA-LU periods.

The "Highlights" section is followed by an Executive Summary that highlights the key findings in each individual chapter. These two sections will also be published as a separate stand-alone summary document.

The main body of the report is organized into four major sections. The six chapters in Part I, "Description of Current System," contain the core retrospective analyses of the report. Chapters 2 through 6 each start

with separate highway and transit sections discussing each mode in depth, followed by a combined section comparing key highway and transit statistics with those presented in the 2006 edition. This structure is intended to accommodate report users who may primarily be interested in only one of the two modes, as well as those who want a quick multimodal perspective on recent trends.

- **Chapter 1** provides a broad overview of the functions served by the Nation's highways and transit systems.
- **Chapter 2** describes recent trends in highway, bridge, and transit system characteristics.
- **Chapter 3** depicts the current physical conditions of highways, bridges, and transit systems.
- **Chapter 4** describes the current operational performance of highways and transit systems.
- **Chapter 5** discusses issues relating to the safety of highways and transit.
- **Chapter 6** discusses outlines highway and transit revenue sources and expenditure patterns for all levels of government, as well as recent innovations in highway finance.

The four chapters in Part II, "Investment/Performance Analysis," contain the core prospective analyses of the report. The Introduction to Part II provides critical background information and caveats that should be considered while interpreting the findings presented in Chapters 7 through 10. Within Part II, the structure of the chapters has been modified; therefore some of the material presented in a particular chapter in the 2006 edition may be found in a different chapter in this report.

- **Chapter 7** projects the potential impacts of different levels of future highway, bridge, and transit capital investment on the future performance of various components of the system.
- **Chapter 8** describes selected capital investment scenarios in more detail and relates these scenarios to the current levels of capital investment for highways, bridges, and transit.
- **Chapter 9** relates the future investment scenario findings to observations regarding the impacts that past highway, bridge, and transit investment has had on the conditions and operational performance of the system, and discusses future implications of the scenarios.
- **Chapter 10** discusses how some future highway and transit investment scenarios would be affected by changing the assumptions about travel growth and other key variables.

Part III, "Special Topics," explores further some topics related to the primary analyses in the earlier sections of the report. Some of these chapters reflect recurring themes that have been discussed in previous editions of the C&P report, while others address new topics of particular interest that will be included in this edition only.

- **Chapter 11** examines the serviceability of bridges on the National Highway System (NHS) and projects the future state of these bridges over a 50-year period under alternative future management strategies.
- **Chapter 12** includes an analysis of condition and performance of transportation serving Federal and Indian lands.
- **Chapter 13** discusses the role of freight transportation and identifies investment and performance issues specific to the freight area.

- **Chapter 14** identifies congestion reduction strategies to address the highway operational performance problems identified in Chapter 4.
- **Chapter 15** discusses selected findings from the 2001 National Household Travel Survey (NHTS).

Part IV, “Afterword: A View to the Future,” describes ongoing research activities and identifies potential areas for improvement in the data and analytical tools used to produce the analyses contained in this report.

The report also contains three technical appendices that describe the investment/performance methodologies used in the report for highways, bridges, and transit.

In assessing recent trends, different parts of this report focus on different time intervals; for example, the “Highlights” section generally compares 2006 statistics with those for 1997. The “Comparison” sections at the end of Chapters 2 through 6 compare 2006 statistics with those for 2004 presented in the last edition of the C&P report. Within the main body of the chapters, many exhibits present statistics for the primary data years reflected in the last five C&P reports (1997, 2000, 2002, 2004, and 2006). Other exhibits cover a longer period of time, depending on data availability and years of significance for particular data series.

This report also discusses security issues that affect the Nation’s highway and transit infrastructure. Although not the primary focus of the report, security remains of paramount importance to policymakers and the general public. Information on these issues is included in Q&A boxes in Chapters 1 and 2.

Highway Data Sources

Highway conditions and performance data are derived from the Highway Performance Monitoring System (HPMS), a cooperative data/analytical effort dating from the late-1970s that involves the Federal Highway Administration (FHWA) and State and local governments. The HPMS includes a statistically drawn sample of more than 100,000 highway sections containing data on current physical and operating characteristics, as well as projections of future travel growth on a section-by-section basis. All HPMS data are provided to FHWA through State departments of transportation from existing State or local government databases or transportation plans and programs, including those of metropolitan planning organizations.

The HPMS data are collected in accordance with the *Highway Performance Monitoring System Field Manual for the Continuing Analytical and Statistical Database*. This document is designed to create a uniform and consistent database by providing standardized collection, coding, and reporting instructions for the various data items. The FHWA reviews the State-reported HPMS data for completeness, consistency, and adherence to reporting guidelines. Where necessary, and with close State cooperation, data may be adjusted to improve uniformity. The HPMS data also serve as a critical input to other studies that are cited in various parts of this report, such as the Texas Transportation Institute’s *2007 Urban Mobility Report* and a 2005 report commissioned by the FHWA, *An Initial Assessment of Freight Bottlenecks on Highways*.

State and local finance data are derived from the financial reports provided by the States to FHWA in accordance with *A Guide to Reporting Highway Statistics*. These are the same data used in compiling the annual *Highway Statistics* report. The FHWA adjusts these data to improve completeness, consistency, and uniformity. Highway safety performance data are drawn from the Fatality Analysis Reporting System (FARS).

Bridge Data Sources

The FHWA collects bridge inventory and inspection data from the National Bridge Inventory (NBI) annually. The NBI contains information from all bridges covered by the National Bridge Inspection Standards (Title 23, Code of Federal Regulations, Part 650) located on public roads throughout the United States and Puerto Rico. Inventory information for each bridge includes descriptive identification data, functional characteristics, structural design types and materials, location, age and service, geometric characteristics, navigation data, and functional classifications; conditions information includes inspectors' evaluations of the primary components of a bridge, such as the deck, superstructure, and substructure. According to the National Bridge Inspection Standards, bridges are inspected once every 24 months with the flexibility to decrease the frequency based on owner-established criteria or increase the frequency based on justification and FHWA approval. The archival NBI data sets represent the most comprehensive uniform source of information available on the conditions and performance of bridges located on public roads throughout the United States.

Transit Data Sources

Transit data are derived from the National Transit Database (NTD). (This information was formerly known as Section 15 data.) The NTD includes detailed summaries of financial and operating information provided to the Federal Transit Administration (FTA) by the Nation's transit agencies. The NTD provides information needed for planning public transportation services and investment strategies. The information from the NTD on transit fleets and facilities is supplemented with information collected directly from transit operators in order to provide a more complete picture of the Nation's total transit infrastructure.

Other Data Sources

Other data sources are also used in the special topics and supplemental analyses sections of the report. For example, the NHTS provides information on the characteristics, volume, and proportion of passenger travel across all modes of transportation; transit user characteristics and system benefits are based on customer survey statistics collected by the Transit Performance Monitoring System; and information on freight activity is collected by the Census Bureau through the Commodity Flow Survey and the Vehicle Inventory and Use Survey, and then merged with other data in FHWA's Freight Analysis Framework.

Investment/Performance Analytical Procedures

The earliest versions of the reports in this combined series relied exclusively on engineering-based estimates for future investment/performance analysis, which considered only the costs of transportation agencies. This philosophy failed to adequately consider another critical dimension of transportation programs, such as the impacts of transportation investments on the costs incurred by the users of the transportation system. Executive Order 12893, *Principles for Federal Infrastructure Investments*, dated January 1994, directs each executive department and agency with infrastructure responsibilities to base investments on “. . . systematic analysis of expected benefits and costs, including both quantitative and qualitative measures . . .” New approaches have been developed to address the deficiencies in earlier versions of this report and to meet the challenge of this executive order. The analytical tools now used in this report have added an economic overlay to the development of future investment scenarios. These newer tools use benefit-cost analysis to minimize the combination of capital investment and user costs to achieve different levels of highway performance.

The highway investment scenarios presented in this report are developed in part from the Highway Economic Requirements System (HERS), which uses marginal benefit-cost analysis to optimize highway investment. The HERS model quantifies user, agency, and societal costs for various types and combinations of improvements, including travel time and vehicle operating, safety, capital, maintenance, and emissions costs.

Bridge investment scenario estimates were developed from the National Bridge Investment Analysis System (NBIAS) model, which was used for the first time in the 2002 edition of the C&P report. Unlike earlier bridge models (and similar to HERS), NBIAS incorporates benefit-cost analysis into the bridge investment/performance evaluation.

The transit investment analysis is based on the Transit Economic Requirements Model (TERM). The TERM consolidates older engineering-based evaluation tools and introduces a benefit-cost analysis to ensure that investment benefits exceed investment costs. TERM identifies the investments needed to replace and rehabilitate existing assets, improve operating performance, and expand transit systems to address the growth in travel demand.

While HERS, NBIAS, and TERM all utilize benefit-cost analysis, their methods for implementing this analysis are very different. The highway, transit, and bridge models are all based on separate databases that are very different from one another. Each model makes use of the specific data available for its part of the transportation system and addresses issues unique to each mode. These three models have not yet evolved to the point where direct multimodal analysis is possible. For example, HERS assumes that when lanes are added to a highway, this causes highway user costs to fall, resulting in additional highway travel. Under this assumption, some of this would be newly generated travel and some would be the result of travel shifting from transit to highways. However, HERS does not distinguish between different sources of additional highway travel. At present, there is no truly accurate method for predicting the impact that a given level of highway investment would have on the future performance of transit systems. Likewise, TERM's benefit-cost analysis assumes that some travel shifts from automobile to transit as a result of transit investments, but cannot project these investments' impact on highways.

In interpreting the findings of this report, it is important to recognize the limitations of these analytical tools and the potential impacts of different assumptions that have been made as part of the analysis. Part IV and the Introduction to Part II both contain information critical to contextualizing the future investment scenarios, and these issues are also discussed in Q&A boxes located in Chapters 7 through 10. Immediately following this Introduction is the "Highlights" section, which summarizes a few of the most critical caveats associated with this analysis.

