



PART I

Description of Current System

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Introduction

Part I of the C&P Report, Chapters 1 through 6, present data on the condition and performance of the highway and transit systems, travel behavior, and funding trends. Data are presented for 2010, with comparisons to the 2008 data and the past 10 to 20 years. Data for each year are to be interpreted in the context of the economic and social environment prevalent at the time. Part I, Introduction, presents the background context to the data to be discussed in the following chapters.

Chapter 1, **Household Travel and Freight Movement**, outlines the trends in travel behavior of households and businesses. The results of the 2009 National Household Travel Survey are discussed in particular, examining the level of travel, time of travel, and mode of travel. Aging of the population and the vehicle fleet are discussed in some detail. Using the data of the travel survey, some of the myths of travel are disputed, for example that the majority of personal travel is for commuting to work. A section on trends in freight travel is added to discuss the trends and issues facing the business community in moving goods across the country to support the diverse and growing economy.

Chapter 2, **System Characteristics**, describes the highway, bridge, and transit systems, presenting the extent and the types of infrastructure in the United States, as well the ownership and geography.

Chapter 3, **System Conditions**, presents the data on the condition of the highways, bridges, and transit systems and vehicles in 2010. The 2010 condition is compared to the 2008 condition data and also to earlier periods, by system purpose, jurisdiction, and geography.

Chapter 4, **Safety**, illustrates the safety data on fatalities and injuries for highways and transit for different modes of travel—motor vehicles, pedestrians, non-motor vehicles and transit systems, and functional class of roads. It discusses the factors contributing to crashes on highways related to roadway design and functionality, as well as human behavior.

Chapter 5, **System Performance**, discusses the data and performance measures for system performance. System performance is defined broadly to include the implication of transportation usage and construction on the environment, land use, and economic competitiveness. It discusses performance measures for livability, environmental sustainability, and economic competitiveness, outlining some initiatives for livability and sustainability and the trends in national congestion and travel time reliability.

Chapter 6, **Finance**, provides detailed data on the revenue collected and expended by different levels of government to fund transportation construction and operations throughout the United States. The trends in the data are discussed, providing a context where appropriate.

U.S. DOT Strategic Plan

In 2012, the U.S. DOT developed a 4-year Strategic Plan 2012-16, outlining the objectives and performance goals for the Nation's transportation system. The U.S. DOT identified five strategic goals that each agency promotes through its programs.

Safety – Improve public health and safety by reducing transportation-related fatalities and injuries.

State of Good Repair – Ensure that the United States proactively maintains its critical transportation infrastructure in a state of good repair.

Economic Competitiveness – Promote transportation policies and investments that bring lasting and equitable economic benefits to the Nation and its citizens.

Livable Communities – Foster livable communities through place-based policies and investments that increase the transportation choices and access to transportation services.

Environmental Sustainability – Advance environmentally sustainable policies and investments that reduce carbon and other harmful emissions from transportation sources.

Each agency identified specific measures and targets for the goal areas, as appropriate and feasible. For instance, for the goal area of safety, the desired outcome is reduced transportation-related fatalities and injuries, which is measured differently by each mode. One of the measures used for highways is the number of fatalities per million vehicle miles traveled (VMT), referred to as the fatality rate. There is a rich database for this measure, which makes it possible to understand the trends over time and to identify some of the underlying factors that may influence it. This allows the agencies to set future targets and to identify strategies to reach the target.

For some of the goals, the outcome depends on the actions of multiple agencies or even multiple departments. For instance, to reduce the crash rate on roads, it may be necessary to redesign the road, change driving behavior—for example, banning use of phones while driving—or requiring additional training and licensing standards for drivers. An achievement of this goal requires concerted effort from three agencies: FHWA, National Highway Traffic Safety Administration (NHTSA) and Federal Motor Carrier Safety Administration (FMCSA). Achieving the livability outcomes require coordination among FHWA, Federal Transit Administration (FTA), and U.S. Department of Housing and Urban Development (HUD). Often, legislation can influence the products that the private sector develops in response to greater awareness of issues. Motor vehicles have become safer over time as consumers demand greater safety.

Each chapter in this edition of the C&P report pertaining to the goal areas above discusses the performance measures and targets identified in the U.S. DOT's Performance Plan for Fiscal Year 2013. The discussion includes the challenges of selecting the appropriate measure, the limitations of the data currently available, and research into developing useful measures. Chapter 3, System Conditions, discusses the performance measures for the state of good repair for pavement and bridges; Chapter 4, Safety, discusses the measures for safety; and Chapter 5, System Performance, discusses performance measures relating to economic competitiveness, livability, and environmental sustainability.

Performance Management

For many decades, the biennial C&P report has provided data on the condition and performance of the highway and transit systems in the United States, informing Congress and the public of the status of the Nation's transportation infrastructure. However, the need for Government accountability and transparency has increased over the last decade. To address this need, many government agencies in the United States and abroad have adopted the practice of performance management.

Performance management is by no means a new concept to the transportation sector. Many States and Metropolitan Planning Organizations (MPOs) already use performance management in transportation planning and programming, as do many other countries, see report from the FHWA International Technology Scanning Program, *Linking Transportation Performance and Accountability*, April 2010 (<http://www.international.fhwa.dot.gov/pubs/pl10011/pl10011.pdf>). According to the PEW Center's report of May 2011 (*Measuring Transportation Investments – Roads to Results*), many States have adopted key elements of performance management such as performance goals, measures, and data that provide their policy makers with information to use for making funding decisions. Other States may be in earlier stages of developing performance goals, measures, and data. The U.S. Department of Transportation (DOT) has introduced some elements of performance management into its operations through its FY 2012-2016 Strategic Plan, and in July 2012 the *Moving Ahead for Progress into the 21st Century Act (MAP-21)* (P.L. 112-141) introduced requirements that have reinforced the importance of performance management for transportation investment decisions.

What is Performance Management of the Federal Transportation Program?

Transportation Performance Management (TPM) is a strategic approach that uses system information to make investment and policy decisions to achieve national performance goals. A typical performance management planning and programming process is likely to follow the practice in *Exhibit I-1*. First, establish a set of goals/objectives to be achieved by the program—these could be general in nature, such as improving safety on the highway system. Second, define measures that support the goal or objective. For safety, this could be the number of crashes or more specifically fatalities. Third, define the measure to be used. Data for the measure and other influencing factors are collected over a period of time to determine the current status, how it has changed over time, and what factors influence its trend. This information can be used to identify actions that are likely to influence the measure trend. Fourth, establish specific future targets for the measure. The specific targets for the measure can be aspirational, based on past trends, or fiscally constrained. Then, specific plans, budgets, and programs are developed to support the desired outcome. Fifth, report the results. After the programs are implemented, the results from the action/investment are assessed against the desired goal. Any discrepancy between the planned outcome and the actual outcome can be addressed by altering strategies and priorities. Performance management is a continual improvement process.

A performance management program for the Federal-aid program will enable States and MPOs to focus on common national goals, targeting investments towards areas of national significance. Tracking performance measures against specific targets helps inform decision makers about how well the current investments are moving the agencies toward achieving national goals. Performance management makes investment decisions more transparent and increase accountability as results are tracked.

Selection of Performance Measures

Performance measures can be either output based or outcome based. An output-based performance measure tracks the quantity of activity undertaken. For instance, the number of lane miles constructed in 3 years is an output measure; it does not tell you how the activity affects the condition or performance of the transportation system. An outcome measure would identify the impact of the action or activity on condition or performance of the system. An example would be the percentage of pavement in good condition. An agency may track both types of performance measures. The output measures would be used to inform the agency what actions/activities are undertaken to influence the performance outcome. If the current actions do not achieve the desired outcome, they should be reconsidered or new actions adopted. The focus of performance management is on the outcome.

An effective performance measure needs to directly relate to the investment decisions of the agency. It has to be a measure that the agency can influence and for which the agency can be held accountable. For instance, pavement reconstruction will improve the condition of the system, but increasing U.S. exports is not something a Department of Transportation (DOT) can influence directly because it depends on the investment and decisions of many other parties. Additionally, the measure needs to be easily understood by the public and not be too complex or costly to create or track. In addition, the measure is to be outcome based and change over a relatively short period of time so that the effectiveness of the actions can be tracked.

Exhibit I-1 Performance Management Planning and Programming Elements

Elements	Description	Examples
Strategic Direction (Where do we want to go?)		
Goals and objectives	Goals and objectives that capture an agency's strategic direction	Infrastructure condition, safety, mobility, reliability, and other goals established by an agency.
Performance measure	Agreed on measures for goals and objectives.	Percent of bridges in good condition, travel time index, and other measures linked to agency goals.
Long-Range Planning (How are we going to get there?)		
Identify targets and trends	Establish aspirational targets or preferred trends based on an understanding of a desirable future for each goal area and measure.	Desired conditions of pavement, bridge, and transit assets. Desired future corridor travel times or reliability levels. Desired future crash, injury, and fatality reductions.
Identify strategies	Strategies, policies, and investments that address transportation system needs within the identified goal areas.	Resurfacing, rehabilitation, replacement, and reconstruction to support infrastructure condition. Signal timing, vehicle maintenance, service patrols, additional capacity (transit or highway), tolling, and other strategies/investments to improve mobility or reliability. Seat belt or drunk driving enforcement, graduated drivers licenses, rumble strips, training, median barriers, and other investments to improve safety.
Strategy evaluation	Evaluate strategies and define program level system performance expectations, may be qualitative.	Examine impact of varying levels of investment on pavement and, bridge preservation and transit assets. Examine impact of packages of operations, capacity and other highway or transit investments on corridor travel time and/or reliability. Examine potential for reduction in crashes, injuries, and fatalities from a package of safety investments.
Programming (What will it take?)		
Investment plan	Identify the amount and mix of funding needed to achieve performance goals within individual program areas.	Investment plan for pavement, bridge, transit asset, operations, expansion, safety, and other projects consistent with strategy evaluation, including specific projects and high-level summary of expected investment levels.
Resource constrained targets and trends	Established quantitative or qualitative targets or desired trends for each goal/measure.	Expected future conditions of pavement and bridge conditions and transit assets. Expected future corridor travel times or reliability improvements given a package of investments. Expected range of crash, injury, and fatality reduction from a package of safety investments.
Program of projects	Identify specific transportation projects for an agency capital plan, or State/Transportation Improvement Program (S/TIP) that are consistent with system performance expectations established in strategy evaluation.	S/TIP with specific projects identified in major program areas (pavement, bridge, transit assets, capital, operations, safety, etc.).
Implementation and Evaluation (How did we do?)		
Reporting and monitoring	Monitor progress on goals relative to targets and resource allocation efforts.	Report on pavement, bridge, transit assets, reliability, safety, and other metrics presented to stakeholders, public, and decision makers.
Evaluation	Identify improvements in analytics, process, etc. to improve the planning process. Evaluating the mix of projects.	Examine actual conditions relative to expected conditions for assets, reliability, safety, and other areas. Identify where tools produced inaccurate estimates or investments and policies were more or less successful than planned.

Source: Performance Based Planning and Programming, White Paper, FHWA, 2012.

MAP-21 Performance Management Requirements

MAP-21 introduced specific requirements for performance management for Federal highway and transit funding programs, reinforcing the use of performance management for Federal surface transportation investments. MAP-21 established national goals for transportation, directed U.S. DOT to establish performance measures for each of the goal areas, and requires States to set performance targets for each of the measures and report the outcomes to U.S. DOT to track progress. The national goals are:

- Safety
- Infrastructure Condition
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Activity
- Environmental Sustainability
- Reduced Project Delivery Delay.

Federal Agencies are required to define the measures and standards for achieving the goals identified, unless defined in MAP-21. The States are to determine their own targets to achieve, while minimum standards may be established by Federal agencies where appropriate. The States are required to develop risk-based asset management plans, safety plans, and freight plans. The 20-year, long-range plans are expected to be performance based.

States are to report progress toward the targets established. Failure to meet targets or develop plans has specific penalties for States – reduction in funding or requirements to spend more on the specific goal area. For instance, failure to develop or implement a risk-based asset plan would result in the Federal share payable on account of any project or activity carried out by the State in that year for infrastructure of only 65 percent. If fatality rates on rural roads increase over the recent 2-year period, the State is required to obligate a minimum of 200 percent of the received funds for FY 2009 high-risk rural roads. States are to report progress toward the targets within 4 years of enactment of MAP-21, and biennially thereafter.

Transit agencies that receive FTA grant funds are similarly required to maintain asset management plans, to set goals for achieving a state of good repair, and to report asset inventory condition data to FTA along with metrics demonstrating their progress toward meeting their goals. MAP-21 also established a comprehensive transit safety program at FTA and the States to assist and monitor transit agencies as they strive to eliminate accidents.