A PRIMER ON PERFORMANCE-BASED HIGHWAY PROGRAM MANAGEMENT

Examples from Select States

January 2008

American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

Prepared by the AASHTO Task Force on Performance Management

American Association of State Highway and Transportation Officials
444 North Capitol Street, NW
Suite 249
Washington, DC 20001
(202) 624-5800
Fax: (202) 624-5806
www.transportation.org

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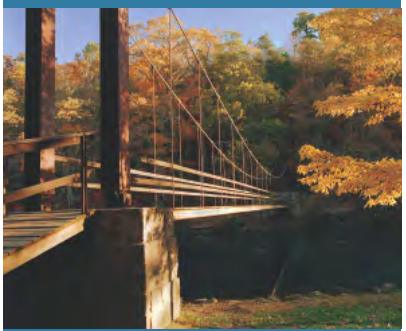


Introduction

State Departments of Transportation (DOT) use performance management for a variety of functions from statewide budgeting and resource allocation to asset and systems management and executive dashboards.

The concept of performance measurement, or measurement on a regular basis of the results (outcomes) and efficiency of services or programs, is nothing new in the public sector. Whether it was known as the RAND Corporation's "systems analysis" in the 1950s or Planning-Programming-Budgeting Systems (PPBS) in the late 1960s, the need to better understand and control outcomes has always been recognized.

Consistent with this trend in the public sector, the use of performance measurement has been embraced by the federal, state, and local transportation agencies across the United States. The sheer breadth and complexity of the transportation network in this country, however, poses a significant logistical and conceptual challenge in the collection, organization, analysis, and application of information based on performance measures as a whole. Fortunately, as the result of the development of better tools and methods, there are a number of successful performance-based transportation programs from which lessons can be drawn.

As demonstrated by these examples, the benefits of a performance-based highway program are numerous:

- It allows for more efficient allocation of increasingly scarce resources;
- It aids in the development and justification of budget and project proposals; and
- It holds government agencies responsible for funding, constructing, maintaining and operating the highway network accountable to the road users and the public at large.

At the same time, there are inherent limitations in performance measurement. First, performance data do not, by themselves, tell why the outcomes occurred. Examining performance data does not tell the story behind the numbers, nor provide the context under which such data was generated. Second, some outcomes cannot be measured directly, such as prevention of undesirable events. Third, information provided through performance measurement is just part of the information managers and elected officials need to make decisions. Fourth, because the range of factors and considerations faced by state DOTs around the country varies from state to state, it is important to avoid using performance measures as a "one-size-fits-all" tool to rank and draw absolute conclusions of state DOT performance.

This report by the AASHTO Performance-Based Highway Program Task Force follows an earlier AASHTO report for the National Surface Transportation Policy and Revenue Study Commission (the Commission) entitled *State DOT Performance Management Programs: Select Examples* published in June 2007. It examined performance-based surface transportation program approaches currently being implemented at some of the state DOTs around the country. Building on that primer, this report describes the basic principles involved in applying performance measurement to the state budgeting and program delivery process, and profiles how 11 states have applied these principles to improve performance and accountability.

AASHTO Performance-Based Highway Program Task Force

Pete Rahn, Chair
Director, Missouri Department of Transportation

Mara Campbell
Director of Organizational Results
Missouri Department of Transportation

Daniela Bremmer
Director of Strategic Assessment
Washington State Department of Transportation

Susan Mortel
Bureau Director, Transportation Planning
Michigan Department of Transportation

Sandy Straehl
Administrator, Rail, Transit, and Planning
Montana Department of Transportation

Jeff Roerden
Management Engineer
North Carolina DOT Productivity Services

Carlos Braceras
Deputy Director
Utah Department of Transportation

Barbara Reese
Chief Financial Officer
Virginia Department of Transportation

John Zamurs
New York State Department of Transportation

Dianna Noble
Director, Environmental Affairs
Texas Department of Transportation

David Ganovski
Director, Office of Freight Logistics
Maryland Department of Transportation

Richard Nordahl
Chief, Office of Goods Movement
California Department of Transportation

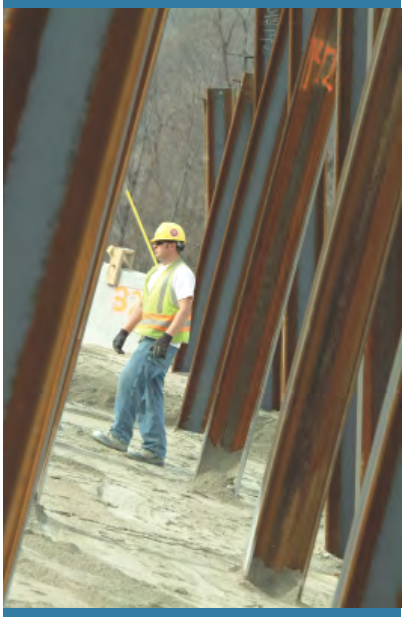
Troy Costales
Division Administrator
Oregon Department of Transportation

Larry Tibbits
Chief Operations Officer
Michigan Department of Transportation

Douglas Rose
Deputy Administrator and Chief Engineer
Maryland Department of Transportation

Timothy Henkel
Division Director
Minnesota Department of Transportation

Robert Romig
Director, Office of Policy Planning
Florida Department of Transportation



Outlook

State Performance-Based Management Programs

Overview of Performance Management

State and local transportation agencies have been using performance measures for many years. During the 1970s and 1980s, the development of pavement and bridge management systems led to the widespread use of facility condition indicators. A number of states such as Ohio, Pennsylvania, Wisconsin, and Washington developed maintenance management systems that defined performance indicators for a range of maintenance and operations activities as well. During this same period, virtually all states reported a variety of "output" measures that reflected the scope and scale of the programs being implemented. In the late 1980s and early 1990s, it began to be recognized that broader performance measurement, focusing more on the "outcomes" of government programs, was needed. In 1989, Oregon established a Progress Board that defined performance benchmarks for all government agencies, including transportation. Other states such as Florida, Utah, and Minnesota followed with similar efforts. During the same time frame, many local governments and their national associations embraced the use of performance measures.

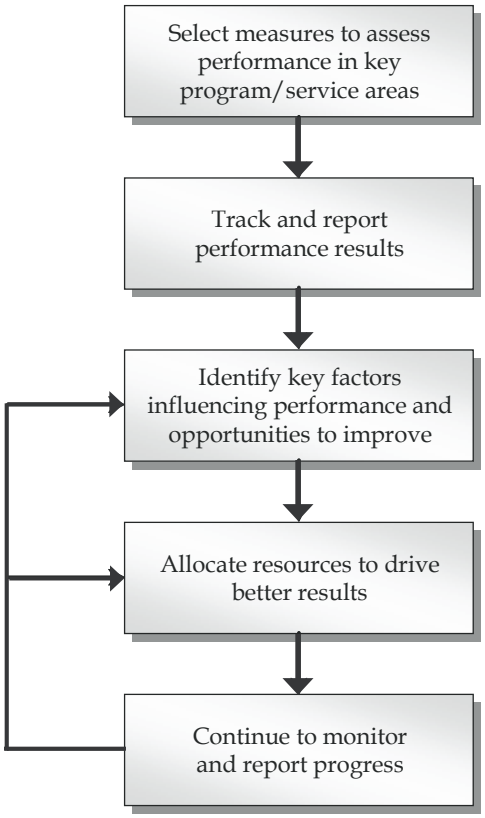
By the mid 1990s, a number of state Departments of Transportation (state DOTs), metropolitan planning organizations (MPOs), and other transportation agencies were beginning to develop and implement more comprehensive approaches to performance measurement. Often these efforts initially focused on a specific function (e.g., long-range planning, project delivery, operations, etc.) or program area (e.g., preservation, safety, maintenance, etc.) and then expanded. Over the past 10 years, as the financial resources available for transportation have become more constrained and the call for more accountability and transparency in government programs has increased, more and more states have implemented or expanded performance management programs.

The trend toward more comprehensive performance management is easy to observe in the programs of three national conferences on transportation performance measurement that have been organized since 2000. From an initial focus on providing guidance on the basic concepts of performance measurement and early implementation results, there is now a wealth of experience with increasingly comprehensive performance management. Many states, including Maryland, Virginia, Florida, Missouri, New Mexico, and Washington; and MPOs, including those in San Francisco, Dallas, Atlanta, and Los Angeles develop quarterly or annual performance reports. Agency Web sites are used to provide access to a wide range of performance information. The CitiStats program, pioneered by the New York City Police Department, involving executive review of agency performance in public forums, has been extended to transportation agencies in a number of cities and states. Performance results are not just reported but are influencing resource allocation and budget decisions.

As a result of the increasing focus on performance over the past few years, comprehensive performance management now is widely embraced as a best business practice in the transportation community. The figure below illustrates the key steps in performance management. At the heart of comprehensive performance management is the discipline to:

- Select appropriate performance measures to assess agency performance in critical program and service areas;
- Track and report actual performance results;
- Analyze results to identify key factors influencing performance and opportunities for improvement;
- Allocate resources and operate transportation systems to drive better results; and
- Continue to monitor and report progress.

Performance Management Process



Increasingly, it is recognized that these steps can be applied to all of the functions and operations of a transportation agency. It also is recognized by organizations that have adopted a performance management approach that the specific strategy must be tailored to each organization, that progress and improvements occur incrementally over time and that full implementation takes sustained leadership over a number of years.

Comprehensive Transportation Performance Management

Adopting a comprehensive approach to performance management requires integrating the basic principles of performance management into all of the critical functions of a transportation agency from planning to delivery to operations. These functions include:

Policy Development and Long-Range Planning. At this stage of the transportation planning and development process, performance measures can help to translate broad policy goals and objectives into more actionable programs, policies, projects and services when combined with broad public outreach and involvement, and a number of cycles of technical analysis and strategy evaluation. Both federal law and planning regulations require that the goals and objectives for transportation plans be developed in cooperation and coordination with a wide range of agencies and stakeholders, including elected officials, business and transportation interest groups, the media and the general public. As a result, the goals, objectives and performance measures in a particular state or region will reflect the results of this process and the priorities of that community.

Programming and Budgeting. A key element of comprehensive performance management is to use performance results to help drive better performance in the future. To achieve this objective requires that performance results in critical program and service areas be tracked and analyzed to identify both the factors that influence performance and opportunities for improvement. Armed with that information, the programming and budgeting process can be used to direct resources and effort where the potential for improved performance is greatest and most important to stakeholders.

Program, Project and Service Delivery. Many transportation agencies' first efforts at performance management have been directed at project and service delivery. Measuring an agency's performance in delivering projects on budget and on schedule can be an effective tool for establishing credibility and accountability. Twenty states participated in a peer effort to compare results in construction project delivery cost and schedule management and define best practices. Service delivery areas that have been the focus of performance measurement efforts include the issuance of permits and licenses, rest area maintenance and response to customer complaints.

System Operations. Managing the real-time operation of the transportation system is a critical priority in virtually every state and metropolitan region in the country. A system operations element in a performance management program is a valuable tool in addressing congestion and safety. In addition to measuring traffic conditions, delay and other service parameters in key corridors or regions, many states are measuring their effectiveness in a wide range of services that affect system operation, including snow and ice removal, clearance time for incidents and work zone delay and safety.

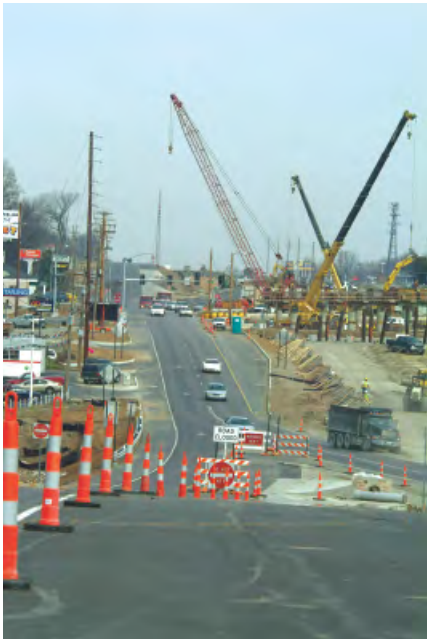
Monitoring and Reporting Results. Tracking and reporting performance results creates the opportunity to learn about the factors that affect performance, identify opportunities for improvement and examine performance results from peer agencies to identify best practice. Depending on the performance results achieved, adjustments may be made in the policy and long-range planning process, resource allocation, delivery, and operations.

Many states have adopted a comprehensive performance management approach involving all of the functions described above. Many others are in the process of introducing performance management into selected functions as a first step. Profiles of a few of these efforts are included at the end of this report. For states that have adopted performance management approaches, the key benefits include:

- Improved system and organizational performance;
- Greater results for the resources available and fewer investments with low performance benefits;
- Strengthened accountability with elected officials and stakeholder groups; and
- Improved communication with the full range of stakeholders.

Relationship to Federal Planning Requirements

The trend toward states adopting comprehensive performance management approaches has been the result of a range of factors, including the demand for more accountability from government programs and agencies, the pressure of scarce financial resources, and the recognition of a best business practice. However, federal planning requirements also have played a



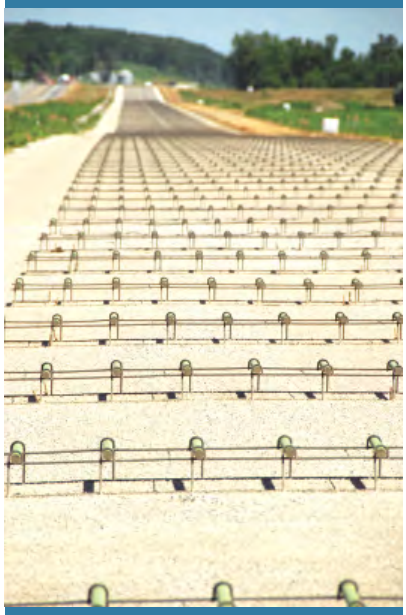
role in supporting and encouraging performance-based approaches. The original ISTEA requirement for management systems encouraged a performance management approach, and the state and metropolitan planning factors define potential performance areas that must be considered. More recently, the SAFETEA-LU requirements for a Congestion Management Process and Strategic Highway Safety Plans encourage consideration of performance measures and performance goals for key emphasis areas. The increasing emphasis on asset management also reinforces the concept of comprehensive performance management.

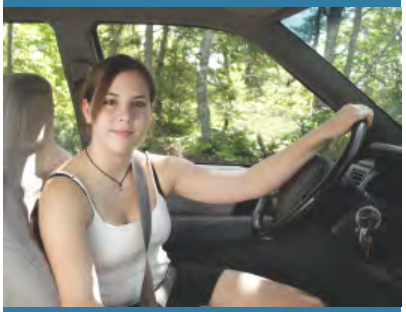
As mentioned earlier, federal planning regulations also require that any statewide or regional transportation goals, policies, and plans be developed with a process that engages the full range of partners and stakeholders. SAFETEA-LU further expanded the list of partners and stakeholders that must be included. As a result of this process, performance goals and objectives reflect local, regional, and statewide concerns and priorities which vary from state to state and region to region. Likewise, effective performance management approaches must be tailored to reflect these state, regional, and local issues and concerns.

Comparative Performance Measurement and Peer Groups

Most agencies are comfortable with comparing performance results within their own organizations. Tracking on-time contract completion for the current year against the past four years does have value. However, the improvement possibilities may be limited to incremental process changes common to internal comparisons. Careful comparison of performance results across agencies can be a useful source of information on best practices and help focus efforts to improve performance over time. However, data limitations and varying approaches to managing services and tracking performance make agency-to-agency comparisons difficult.

State DOT leaders work with their counterparts in other states to improve business processes by identifying best practices and innovations. A subcommittee of AASHTO's Standing Committee on Quality began working in 2005 on a prototype to analyze on-time and on-budget performance of construction contracts. The 20-state voluntary group chose construction contracts for the prototype because most transportation agencies define the construction phase of project delivery in similar terms and already collect good data on costs and schedules. Where applicable, the prototype used AASHTO's TRNS*PORT software suite, which is a comprehensive construction contract





management tool used by several state DOTs. More than 26,500 projects completed from 2001 to 2005 were analyzed.

The study found that strong performing state DOTs had specific strategies to foster accountability for cost and schedule, monitor causes of problems to identify common culprits, create incentives for staff and contractors, and strengthen connections between preconstruction and construction work phases. By analyzing and comparing results among this peer group, 28 best practices from 9 different states were identified.

The usefulness of this first effort has all 20 states already committed to the next round of analysis focusing on smooth pavements, with an additional 18 states joining in. A consistent analysis of performance results can be a powerful learning tool, which can improve business processes and push innovation. The intent is to expand to other performance areas in the future, although some areas may be more difficult to measure. AASHTO and FHWA also have sponsored a number of peer exchanges, conferences, and scanning tours focused on various aspects of performance management. These efforts have also been focused on defining best practices and identifying areas requiring additional research.

While comparative performance measurement can be a very useful tool when used correctly, when comparative information is misused it can be misleading and counterproductive in terms of learning or identifying best practices. One size certainly does not fit all in terms of implementing best practices from comparative measurement efforts. A best practice at one state DOT may not be successful at another due to numerous factors, including differences in operating structure, legislative constraints, organizational culture or even geography. Therefore to be of real value, best practices must be analyzed for proper organizational fit and appropriately customized to deliver the desired performance.

Limitations of Performance Management

While comprehensive performance management is now recognized as a best business practice, it alone will not guarantee that a desired or acceptable level of performance will be achieved. In some performance areas, such as congestion and safety, there are factors that influence performance that are not under the control of the transportation agency. Engaging a broader set of partners to define and drive shared performance objectives, such as the process envisioned for the development of Strategic Highway Safety Plans, may address some of this issue. More importantly, however, the total funding available for transportation will limit the performance that is possible to achieve even with a comprehensive performance process in place. If sufficient funding is not available, performance management does not make up the difference. What performance management can help to achieve is the best level of performance possible given the resources that are available. However, available resources must be spread across a range of performance areas, and performance management involves balancing performance and resources and making trade-offs to reflect local priorities.

Conclusion

Comprehensive performance management is widely embraced in the transportation community. While most states are implementing performance-based management approaches, all states can certainly further strengthen their performance management processes to achieve better results in critical areas.

Profiles

Implementation Results at Select State DOTs

All state DOTs are using performance measures to some extent, and some states have moved to a more holistic approach to performance management. However, there is no one standard approach to performance management that is appropriate for all states. The resources available; unique geographic, demographic, political and economic factors; and local policy directions all influence the level of performance that is desired and that can be achieved. Though no "one-size-fits-all" approach to performance management is appropriate, every state can make further progress in strengthening their performance management processes and driving better results in critical areas. AASHTO, the U. S. DOT, and individual states have sponsored or been involved in a wide variety of efforts to share experiences and results in performance management through peer exchanges, conferences, workshops, scanning tours, and other activities. The following profiles summarize the experiences of 11 states in implementing performance management approaches.

California

The California Department of Transportation (Caltrans) is implementing a performance management program that includes three components:

- **Strategic Plan** — Caltrans recently updated its five-year strategic plan (2007 through 2012). This plan includes the mission/vision, values, goals, objectives, and the strategies to achieve each objective. Caltrans took an unprecedented step of providing every employee the opportunity to participate in developing the strategic plan to ensure buy-in, commitment and ownership of the plan at all staff levels. Meetings were conducted throughout the state to allow staff participation. There are five goals (safety, mobility, delivery, stewardship, and service) and 26 objectives in the strategic plan. Each objective has a specific target to be completed by 2012. To ensure that the ultimate target for each objective is reached, annual targets have been established for each of the five fiscal years covered in the strategic plan.
- **Operational Plan** — The operational plan includes all Caltrans' activities that repeat from year to year. It is a fully resourced plan and reflects each fiscal year's planned use of budgeted resources. All activities line up to the key objectives and goals for the Department. Each year, the operational plan reflects the annual targets from the strategic plan.
- **Performance Measures** — Either on a quarterly or annual basis (depending on the measure), Caltrans will monitor progress towards achieving each of the objectives. It will assess whether the annual target was met and how resources were used to meet the target. This will enable adjustments to be made — whether the appropriate resources were allocated towards meeting an objective (too much or too little), annual targets need to be

adjusted to meet ultimate goal, etc. It can help identify where resources can be used to address higher priority needs — within programs and across programs.

Together, these will serve as the tool to inform management, drive budget decisions and achieve organizational results. Caltrans is just in the early stages of this process implementation. However, Caltrans has used performance measures to drive individual program performance extensively in areas such as project delivery, maintenance and operations, and programming and budgeting.

Examples of Specific Functional Use

Policy Development and Long-Range Planning

California Transportation Plan (CTP) is the product of extensive public outreach and consultation with transportation partners and stakeholders. The CTP presents a vision for California's future transportation system, and defines goals, policies, and strategies to guide decisions. The CTP vision is one of a fully integrated, multimodal, sustainable transportation system. The CTP provides a common policy and strategic framework for decision-makers at all levels of government and the private sector to guide transportation decisions and investments that will create a world-class transportation system. This framework is built upon a set of System Performance Measures related to mobility, accessibility, preservation, economic vitality, safety and security, equity, and environmental quality.

Regional Transportation Plan (RTP) Guidelines have set the policy framework for the state's Metropolitan Planning Organization (MPOs) to develop federally required RTPs. The current version of the guidelines contains substantial language to assist the MPOs and Regional Transportation Planning Agencies in their development of RTPs that fit within the California Transportation Plan framework. The guidelines are presently under revision with further strengthening of the role of system performance measures to serve as the foundation to set regional goals, assess performance, and evaluate and develop solutions. System performance measures are becoming a common thread to connect the RTPs required policy, action and financial elements.

Programming and Budgeting

California's State Transportation Improvement Program (STIP) guidelines set the project decision and scheduling framework to select a program of deliverable and funded state and regional projects that enhance transportation system performance. Both the state and regional agencies quantify performance measures and indicators to link the project back to the Regional Transportation Plan. This action strengthens the connectivity between long-range planning goals and programming.

Program and Project Delivery

Caltrans has historically reported key project delivery milestones internally and externally (i.e., California Transportation Commission and others). Caltrans' Director Will Kempton entered into Contracts for Delivery with each District director to ensure project delivery commitments are met. As a result, in each of the past two years, nearly 100 percent of contract project delivery commitments were met. The director also has entered into Contracts for Performance

and Innovation with each of his deputy directors. These contracts include key performance objectives and measures that align with overall strategic goals.

Operations

Caltrans is piloting a State Highway Operations and Protection Program (SHOPP) Investment Analysis. Past decisions regarding allocation of available funding among the various SHOPP categories were largely guided by historical trends. The prototype tool is based on Asset Manager NT and includes a database of information on systems maintenance and operating needs, the cost of addressing the needs and the anticipated outcome of these investments in terms of performance improvements. The tool compliments existing department models and supports SHOPP decision-making. The needs-based approach fits with the Caltrans' efforts in performance measurement and system management.

New York

The New York State Department of Transportation is in the process of expanding the many successful performance management efforts that have occurred within individual units into a more comprehensive agency-wide performance management program.

A number of significant and ambitious performance measurement systems have been developed to this point. The Department is tracking its performance measures through an internal, web-based system of "Dashboards" that were developed in-house. This web-based system allows users to "drill down" into different levels of performance, as well as linking to explanatory information, various trends, pie and bar charts, maps, and e-mail addresses of experts for each individual performance indicators. Three main Dashboards are available on the Department's internal web site — the Systems Dashboard, the Executive Dashboard, and the Operator Dashboard. All three dashboards are still being refined.

The Systems Dashboard is intended to measure the impact of the entire state transportation system, and focuses on multimodal, customer-focused, outcome-based indicators at the agency-wide or statewide level. This ambitious application presents significant performance management challenges, as the indicators include measures of performance that the Department itself often has little or no control or influence over. In addition, many of the measures on the System Dashboard track the performance of other transportation agencies despite the lack of either a "carrot" or "stick" for influencing their performance. The difficulties inherent to such a system account for the formative nature of the Department's corporate performance management efforts, which require sustained executive attention, increased resources, and cultural change.

In addition to this set of system-wide measures, another set of measures that is still being developed and refined is reflected in the Executive Dashboard. This set of measures is focused on more attainable and pragmatic goals based on indicators the Department has traditionally tracked and has more direct control over. These indicators include pavement and bridge conditions, project delivery, programming and budgeting, operations, and workforce diversity.

There also is an Operator Dashboard developed for the Department's Operating Division. This Dashboard includes measures related to managing the everyday performance of the Department's valuable assets. It also compares the projected output accomplishments of regional performance against essential outcomes such as pavement and bridge conditions.

Maryland

Maryland's Department of Transportation, State Highway Administration (SHA), has been engaged in performance management for 10 years. The initial efforts began with the passage of Maryland's Managing for Results (MFR) statute. MFR in Maryland requires that state agencies report performance data with their annual budget request. The focus is on organizational outcomes that are important to customers and external stakeholders. A core set of performance measures (such as highway fatality and injury rates, pavement condition, wetland replacement quantities and overall customer satisfaction) have been compiled and reported annually since that time. This year, with the election of Governor Martin O'Malley, Maryland's performance measures programs were elevated to StateStat, based on the CitiStat approaches used in Baltimore and New York. StateStat focuses on operational performance measures that point to specific products and services that need attention to achieve quick improvements in them.

MSHA was well-positioned to meet the Governor's expectations due to their internal efforts over the past four years. SHA implemented a Performance Excellence initiative that is comprised of five areas, one of which is Business Planning and Performance Measurement (BP/PM). The BP/PM program at MSHA includes four key components. They are:

1. SHA-wide business plan with approximately 400 performance measures. This plan articulates MSHA's six goals, one for each key performance areas of Highway Safety, Mobility, System Preservation and Maintenance, Environmental Stewardship, Organizational Effectiveness and Customer Communication, Service, and Satisfaction;
2. "Local" business plans in each of the offices/districts with supporting measures and strategies;
3. Common performance measures across District offices; and
4. Performance-based employee appraisal that is being piloted by SHA's middle and senior managers.

MSHA uses their performance measures program in the following ways:

- **Budgeting and Programming** — Performance measures are used to demonstrate the need for state system preservation capital and operating funds to the Maryland Legislature, especially for pavement, bridge, and roadway maintenance. MSHA requests funding enhancements in specific areas where performance results indicate that additional funding is needed to sustain or improve performance. Furthermore, when substantial increases in funding are secured,

such as this past year's increase in bridge maintenance funding, the performance data demonstrates how the money was used.

- **Program Management and Project Delivery** — Financial performance data for capital projects have been linked to specific program outcome objectives. Once overall funding levels for these programs are established, program activities are reviewed based on quarterly performance results and adjusted as necessary to optimize performance. MSHA has many examples of where programs are managed using performance measures; the key ones are highway safety, pavement, bridge, maintenance activities, environmental compliance, and ITS.
- **Operations** — MSHA's District Offices have established a common set of outcome measures that are set to appropriate targets for each district. This sets the stage for operational decisions across the districts. The most successful application has been in managing maintenance activities. MSHA has a robust data repository for maintenance activities that track outputs and efficiency through each district maintenance shop, which can then be used to adjust work activity priorities.
- **Monitoring Results, Feedback and Communication** — MSHA's leadership monitors agencywide performance results on a quarterly basis. Feedback is provided to Key Performance Area leaders about performance that is outstanding, on track and needs improvement. Manager's performance appraisals are based on performance plans that link to office and district business plans as well as individual performance targets. Finally, agency-wide performance reported in MSHA's *Annual Report* is based on the business plan performance measures and strategy accomplishments.

Florida

The Florida Department of Transportation (FDOT) has a long history of using performance measures and has been regarded as a national leader in this area for several years. FDOT is primarily responsible for 12,000 centerline highway miles, including 6,200 bridges that carry two-thirds of all traffic on Florida's public roads. Ensuring the safety and mobility of people and goods on these facilities, while enhancing economic prosperity and preserving the quality of the environment and communities, are paramount to the mission of the Department. To achieve this, Florida has developed an asset management process that is:

Policy-Driven:
- Strong statutory policy framework; and
- Preservation/capacity program trade-offs made at the policy level.

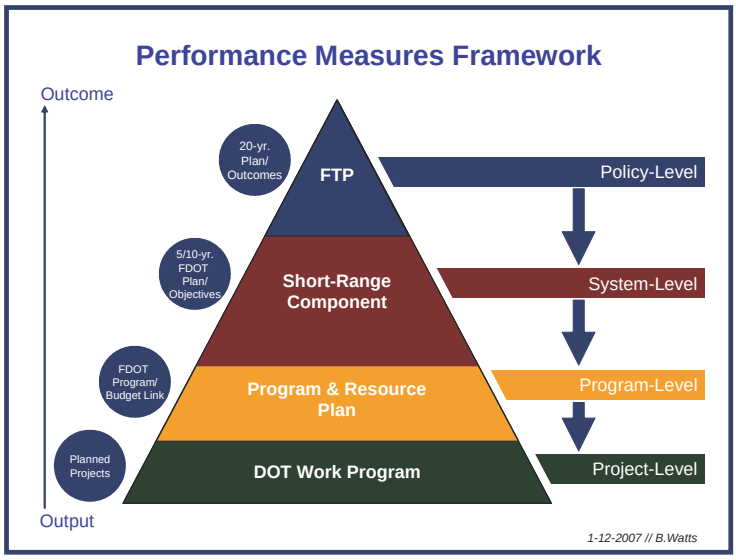
Supported by Data:
- Management systems; and
- Performance-based programming and budgeting.

Systematic Approach to Decision-Making:
- Continuous cycle approach, including evaluation and feedback.

The Framework

The accompanying graphic illustrates the Performance Measures Framework in which FDOT operates, measures its performance and measures performance of the transportation system.

The Florida Transportation Plan sets long-range goals and objectives for at least 20 years to guide transportation decisions in Florida. It provides the policy direction and desired outcomes for Florida's transportation system.



The Department establishes quantifiable short-term (up to 10 years) objectives for meeting its responsibilities for implementing the Florida Transportation Plan in the Short-Range Component of the Florida Transportation Plan. The Short-Range Component is updated annually and serves as the FDOT's annual performance report. It documents the Department's objectives and strategies, specifies how those objectives are being met and provides policy guidance for development of the FDOT work program and budget.

Each year, FDOT also develops a 10-Year Program and Resource Plan to establish financial and production targets for state transportation programs. It guides program and funding decisions to carry out the goals and objectives of both the Florida Transportation Plan and the Short-Range Component. This plan essentially links the FDOT long-range transportation planning process to the annual budget and Work Program. The Work Program is a five-year listing of all transportation projects planned for each fiscal year, adjusted for the legislatively approved budget for the first year.

Systematic Measurement and Monitoring

Key Performance Measures are monitored on a monthly basis by the FDOT Executive Board. New measures are established when needed and existing measures are validated periodically. Program offices are responsible for establishing key performance measures and submeasures used to achieve organizational improvements. The current key performance measures fall into five categories: Transportation System Safety, Customer and Market Focus, Production Performance, Transportation System Performance, and Organizational Performance.

Additionally, each office/program within FDOT has developed performance measures and monitors performance on an ongoing and continuous basis using PBviews Performance Measurement System, a performance measurement database. All FDOT performance measures and data are available for viewing and analysis using this internal system.

The system displays monthly, quarterly, and annual information about the selected measures in a variety of ways. From raw data for each input item, to trend charts and graphs showing actual versus target measures or year-to-year comparisons, the system can show the smallest detail or the "big picture" about any selected measure. The goal is to provide information and basic analysis for management at all levels to use in monitoring and tracking the key measures of the Department.

How We Are Being Measured by Others

The Florida Transportation Commission is an independent oversight entity that provides leadership and policy reviews and recommendations to maintain public accountability for the Department. The Florida Transportation Commission is required by law to monitor, on at least a quarterly basis, the efficiency, productivity and management of the Department using performance and production standards developed by the Commission. These standards include production, finance and administration, preservation and safety of the state system, highway and public transportation capacity improvements, and disadvantaged and minority business programs.

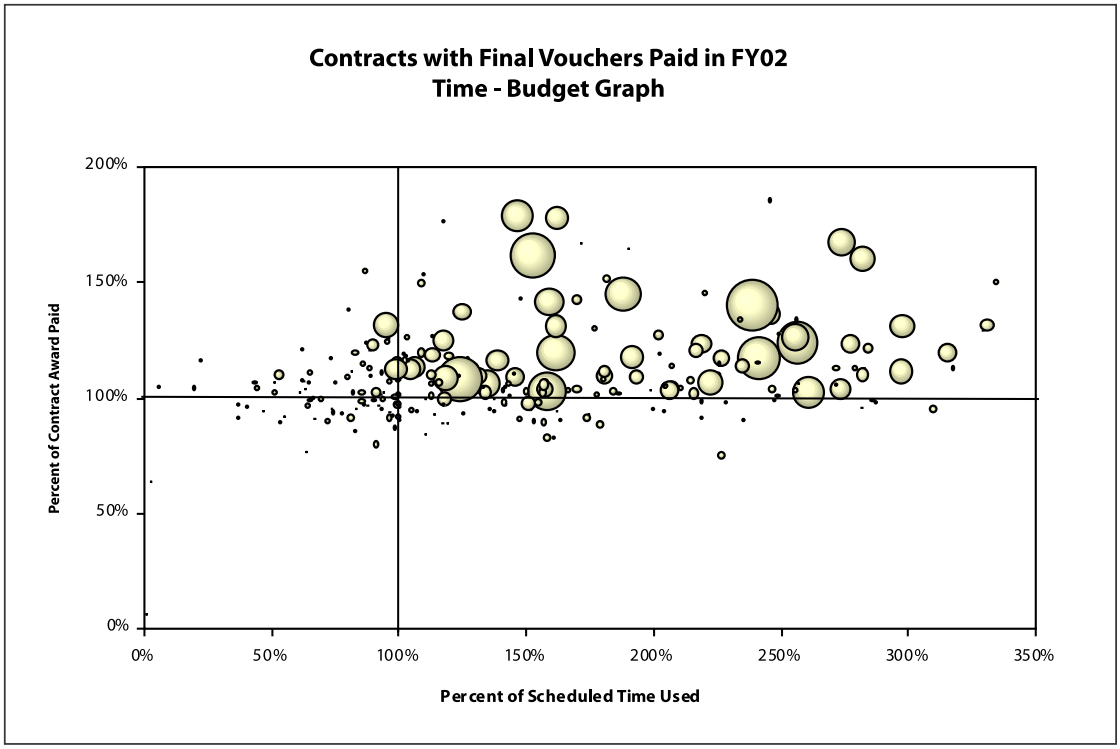
In addition to the Transportation Commission, the Governor's Office uses their Long-Range Program Plan (LRPP) to provide the framework and justification for agency budgets by linking agency budgets and accountability structure. The LRPPs are goal-based plans with a five-year planning horizon utilizing legislatively approved performance measures and standards.

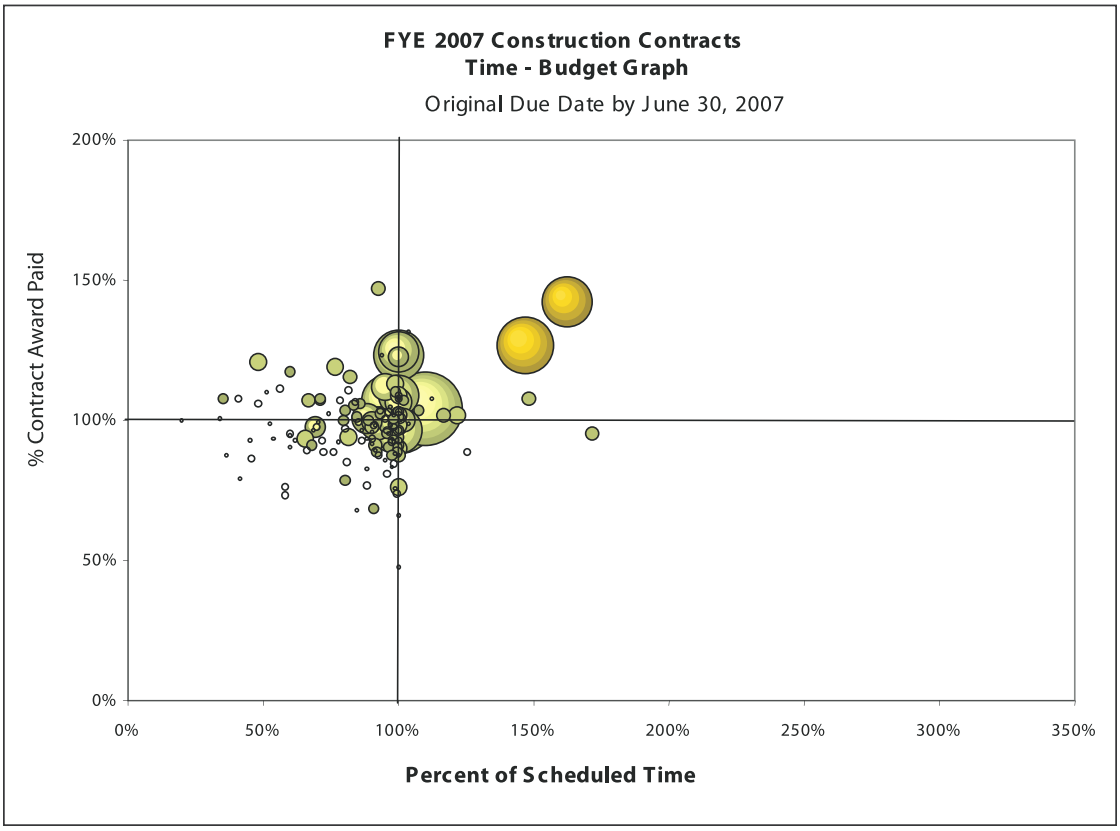
Virginia

In 2003, the Virginia Department of Transportation (VDOT) initiated a new, more focused, performance measurement program. Initially, the program focused on on-time and on-budget delivery of projects. It was felt that these metrics were widely understood by the public and represented an area where improved performance by VDOT was critical both to reestablish credibility and effectively manage available resources. The VDOT Dashboard was created to report specific results to the public and key measures and targets were established. Efforts to improve public communication and organizational effectiveness were started, including a reorganization of internal reporting structures and accountability. Aggressive targets were set and the results were dramatic. From 2001 to estimated results for 2007, construction on-time performance improved from 20 percent to 90 percent and construction on-budget performance improved from 51 percent to 90 percent.

At the beginning of this effort, the focus on on-schedule delivery led to some issues with construction quality. However, once those issues were recognized, adjustments were made and additional measures related to construction quality, environmental compliance, and roadway safety were added. The focus on delivering contracts on-budget has led to the realization that a particular type of small- to medium-size bridge maintenance projects seemed to be very difficult to deliver within budget. This pointed out the need to better define contract scopes of work prior to contracting and illustrates the type of learning and improvement that resulted from the focus on performance management.

Additional "second tier" measures have been added to extend the VDOT performance measurement program to all of its functional areas. Starting in 2007, the Dashboard also will be expanded to include measures of congestion, safety, overall management, and customer satisfaction. A key principle in developing a holistic approach to performance management has been transparency. The Dashboard has provided legislators, citizens, and the press with access to key performance indicators for VDOT, and the Department has been open to sharing performance results both good and bad on an ongoing basis. The openness to sharing all results and not trying to "spin" all news as good news has helped VDOT reestablish its credibility.





Note: Contracts highlighted in orange have not yet been completed.

Washington

Increasing Transparency and Accountability

At the Washington Department of Transportation (WSDOT), performance-oriented data collection and analysis began with a series of legislative mandates in 1990 and was significantly expanded in 2001 with the adoption of a comprehensive accountability program that includes frequent reporting of system and agency performance in the quarterly publication Measures, Markers, and Mileposts, also referred to as "The Gray Notebook" (GNB). WSDOT's performance management approach is integrated and holistic. It encompasses policy development, long-range planning, strategic and business planning, performance-based programming and investment decision-making. For example, WSDOT's asset management program for many years has used performance data to allocate limited resources resulting in 97 percent of bridges and 93 percent of pavements being in good or better condition. Performance measures also provide guidance for project delivery, system management and operations. Annually, the agency uses over 100 specific performance metrics that cover all key agency functions, programs and multiple modes. Performance measurement has long become an important core management tool at WSDOT — the motto used often is, "What gets measured, gets managed."

Communicating Performance Results

Effective communication of results is as critical as the measurement itself. WSDOT created a method it calls "Performance Journalism" that combines clear narrative and storytelling with visual graphs and data to provide an accurate assessment of activities to the widest possible audience. WSDOT makes extensive use of its Web site and the GNB is distributed both in hard copy and electronically to a broad audience of 2,000 to 3,000 subscribers. A web-based subject index allows access to every performance result ever published. In addition, the agency uses folios, special reports, and other media and communication tools that are all based on consistent and high-quality reporting.

Making a Case for Funding

The largest impact of using and reporting on performance measurement has been the increased confidence of the Governor, Legislature, and the public. In April 2001, the agency lacked public confidence and credibility and faced negative media. Following WSDOT's GNB release, the *Puget Sound Business Journal* published in the fall of the same year wrote: "Accountability builds trust and candor, removes mysteries; (*The Gray Notebook*) is as addictive in the same manner as a copy of The World Almanac."

Communicating Performance to External Audiences: Project Delivery

In 2003, the Washington Legislature passed a five-cent gas tax to fund $4.5 billion in long-overdue transportation projects. Within weeks of the Legislature adjourning, WSDOT began reporting on the first of these projects' performance. WSDOT's "no surprises" reporting described the agency's successes and challenges on a quarterly basis in delivering projects to the public, whose gas taxes funded these projects. As a result of this transparency and the agency's strong record in project delivery, the 2005 Legislature appropriated $8.5 billion to fund an additional

274 projects. In their proposal to fund these projects, legislators pointed out that the agency's "sharp focus on accountability and efficiency" provided their members and the public with the confidence that the agency was fulfilling the expectations of the 2003 funding package, and could deliver the additional projects funded in their proposal. The funding package subsequently passed, and also withstood a voter initiative to repeal the 2005 gas tax. This was the first time that a voter initiative for a tax decrease failed.

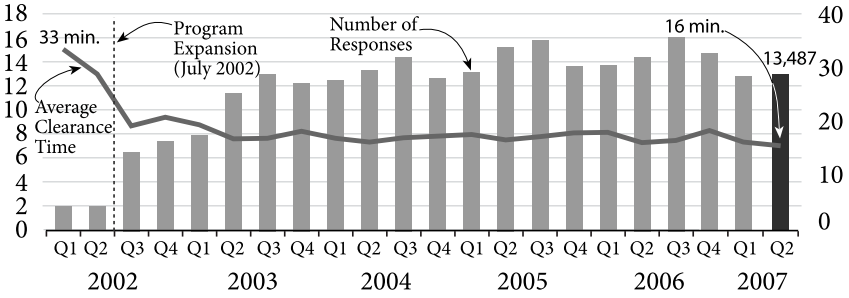
"No surprises" reporting also has yielded positive results when projects are facing delivery challenges. Washington state has experienced the same difficulties faced by other states due to rising construction material and labor costs and a shrinking bidding market. While WSDOT's overall construction program is delivered with 99.5 percent of the original budget, individual projects face cost increases. The candid and detailed reporting approach built credibility with the public and Legislature. This confidence was further demonstrated by the Governor's and 2007 Legislature's decision to fund cost increases for the 2003 and 2005 funding package projects.

Improving System Performance: Incident Response

WSDOT published extensive system-level performance results. The following is an operational strategy example. In 2002, the average incident clearance time was 33 minutes. After WSDOT provided data, the Legislature funded an expansion of the Incident Response program. As a result, WSDOT was able to reduce clearance times to an average of 18 minutes. Further analysis of the data revealed that the duration of fatality and injury collisions that required more than 90 minutes to clear remained unchanged (21 to 29 percent of all incidents). In response, in 2006 WSDOT and the Washington State Patrol set a goal to reduce the average duration of these long incidents by 5 percent. As of July 2007, the current average is 163 minutes — a 6.3 percent improvement.

Average Clearance Time for All Incidents
GNB, June 2007

Number of Responses and Overall Average Clearance Time
January 2002 - June 2007
Number in Thousands



Data Source: WSDOT Incident Response Tracking System.

Note: Program-wide data is available since January 2002. Prior to Q3 of 2003, number of responses by IRT are shown. From Q3-2003, responses by Registered Tow Truck Operators and WSP Cadets have been reported in the total. Average Clearance Time does not include "Unable-to-Locate" responses into calculation.

Montana

Background

Montana is a vast, sparsely populated state with 10,850 centerline miles of state-maintained highways and over 5,000 bridges. For a sense of scale, Montana is larger than the combined land area of the 10 northeastern states and has less than 2 percent of the population of those states, with about 945,000 residents. Of Montana's 56 counties, 23 remain under the 1890 census definition of "frontier" with less than two persons per square mile. The highways under state maintenance account for 16 percent of the state's public road mileage, but serve about 77 percent of the vehicle miles traveled in the state. The state fuel tax is $0.2775 per gallon and generates about $7 million annually for each cent of tax. This level of revenue generating capacity is about one-tenth that of Ohio, which has about the same state fuel tax rate.

These descriptive statistics have framed the Montana Department of Transportation's (MDT) approach to asset management and performance-based programming. The impetus is simple: Montana's highway program resources are scarce and a performance-based framework is essential to maintain a huge highway system in a severe climate that is essential for the economic health and well being of the state.

History of Montana's Performance Programming Process (P3)

Since the late 1990s, MDT has been improving on an inclusive, performance-driven asset management system referred to as the Performance Programming Process or P3. Asset management is a process that uses management systems to manage infrastructure to meet established performance goals. Asset management is data-driven and based on agreed on policies regarding performance. The data comes from management systems for pavement, bridges, congestion and safety that continuously track system condition and recommend treatment options to maximize the life of the asset.

P3 in Montana begins with a policy basis in the statewide transportation plan, receives support through continuous data collection on the condition and performance of the system, and ultimately allocates resources to geographic districts, systems, and types of work based on optimizing performance for the target performance goals. It can best be understood as several annual and multiple-year activity cycles that interact to plan, program, and deliver Montana's highway improvements.

The following are specific examples of P3 cycles at the vision, performance goals, investment decision, and system performance level.

Vision

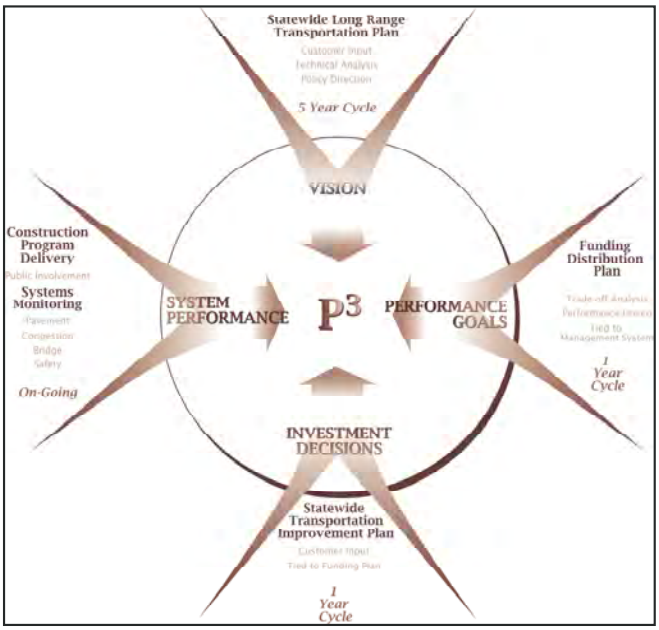
- MDT's statewide transportation plan (TRAN-PLAN 21) links policy and programming decisions to system needs. TRAN-PLAN performance goals include improving pavement conditions on arterial highways, especially the interstate, reducing the number of structurally deficient bridges, selectively building capacity, and reducing fatalities.

Performance Goals

- In P3 the key question asked is what can be achieved in terms of system performance given currently available and anticipated funding. This question is answered by performing a series of trade-offs between improvement strategies for each of the arterial systems and geographic districts.

Investment Decisions

- Annually, a P3 funding distribution plan is approved by Montana's Transportation Commission. The funding plan moves system performance toward adopted goals. Investment decisions are reinforced by only adding new projects into the program that contribute to the overall performance goals of the system. The management system information used to develop the funding plan also is used to ensure nominated projects contribute to achieving goals.



P3 also has been useful in educating legislators why over-investing in capacity expansion on select corridors will harm overall system performance within a constrained budget.

System Performance

- Asset management also relies on continuous systems monitoring. MDT continually monitors pavements, bridges, congestion, safety and program delivery. Investment planning through P3 has driven performance improvement. Between 2000 and 2006, the percentage of Montana's Interstate pavement rated desirable or superior increased from 54 percent to 90 percent. The number of structurally deficient bridges was reduced from 625 in 2000 to 500 in 2006, a 20 percent reduction.

P3 is not a "silver bullet," but a business process that develops an optimal funding allocation and investment plan based on strategic highway system performance goals, and the continual measurement of progress toward these goals. In Montana, P3 is built on a dialogue with the state's stakeholders. This process is not static. Rather, emerging issues continue to inform the policy discussions that surround the funding plan, and system performance continues to be an aligning principle of the Montana Department of Transportation.

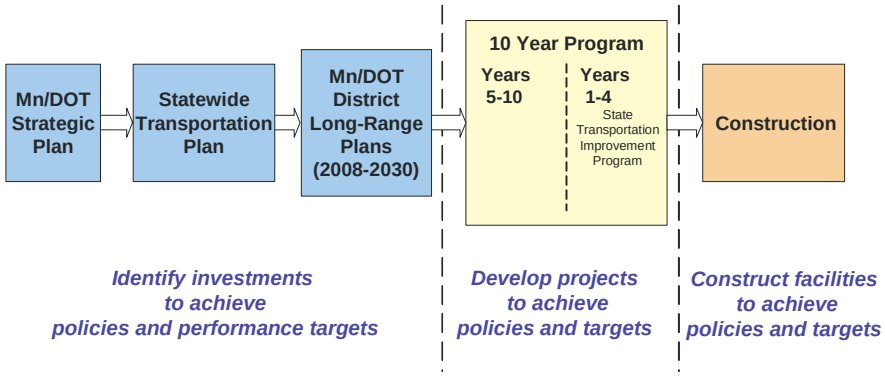
MT P^3 Performance Measures

		I	N	P
Pavement	- Average Ride	Desirable or Superior – All Arterials		
	- % Miles below target	<3%	<5%	<5%
Congestion	- LOS	B	C	C
Bridge	- SD/FO Bridges	Reduce #	Reduce #	Reduce #
Safety	- fatalities & Serious Injuries	1.0 / Million VMT by 2015 and Reduce Incapacitating injuries to 950		

Minnesota

Minnesota DOT (Mn/DOT) has been engaged in developing performance management tools since the early 1990s, and now has a system that spans most of its products and services and strategic priorities. With Mn/DOT's performance-based planning system — clear policy priorities, performance trend data, and performance forecasts are used to guide development of the capital program and many operational decisions. The figure illustrates this process for the highway construction program.

MN/DOT's Performance-Based Planning Process for the Highway Construction Program



Mn/DOT's eight districts are expected to manage resources to achieve performance targets for the Department's highest priorities — such as pavement and bridge preservation, safety, and snow and ice removal. They are expected to manage to performance targets for a full range of transportation services and assets.

Regular face-to-face performance reports to executive management and districts, at least quarterly, provide accountability and are a forum for policy review and problem-solving.

Scope

Key elements of the performance-based system include (with some specific examples):

- Twenty-year transportation plan, 10-year work plan, and four-year capital program;
- Asset preservation — pavements, bridges, airport run ways and bus and truck fleets are managed to meet targets and reduce life-cycle costs;
- Highway System Operations Plan — includes preservation, mobility, safety measures;
- Freight Plan and Aviation System Plan — measures tied to policies;
- Biennial budget process;
- Program and project delivery — monitoring of on-time, on-budget variation;
- Process improvement and best practices — reduced Right-of-Way and EIS processing time;
- Administrative Support — IT projects on-time and on-budget; and
- Customer research — monitors satisfaction and helps set some performance targets.

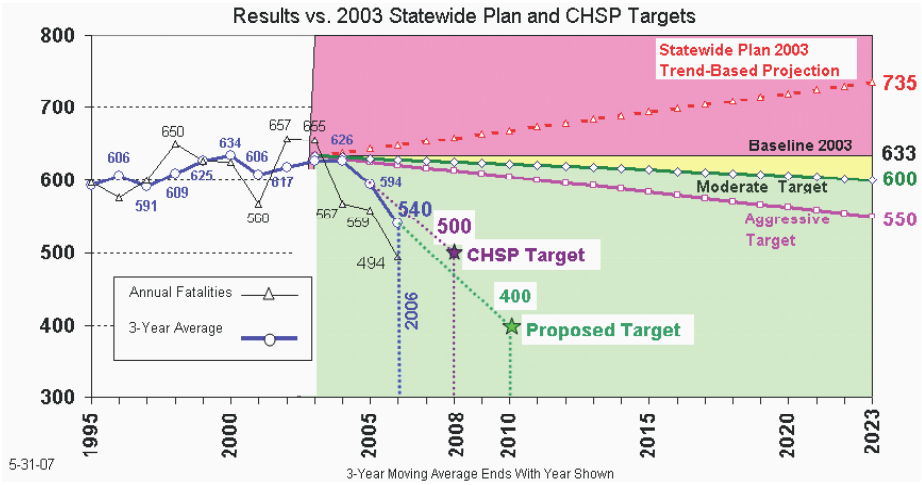
Results — Transportation System and Customers

As resources have tightened, benefit/cost and performance evaluation of options allow Mn/DOT to shift resources to projects and services with the best results for the dollars invested.

Some examples of recent performance results achieved in Minnesota are:

- **Highway fatalities** have fallen for four straight years and are at the lowest level since 1945 — as a result of aggressive performance targets, new strategies and a Toward Zero Death program partnering with local governments and others.

Minnesota Roadway Fatalities
All State and Local Roads



- **Congested miles** on the Twin Cities urban freeway system have been reduced for three years straight, from 22.9 percent in 2003 to 20.6 percent in 2006.
- **Snow and Ice Removal** – State performance targets for average hours to clear roadways after snowstorms have been met consistently since 2000.
- **Bridges** – State bridges in Fair or Poor condition were reduced from 14.0 percent in 2003 to 11.3 percent in 2006.
- **Construction Project Delivery** – From 2000 to 2005, construction of 94 percent of all major projects was completed on schedule.
- **Customer Satisfaction** exceeds targets for Snow and Ice, Signing, Pavement Markings and Rest Areas.

With intense competition for limited resources, results in some areas, such as pavement condition, fell below targets in the early part of the decade. A concerted effort to redirect the capital program has started to reverse that trend.

To manage the capital budget, Department and District executives meet twice a year to review the actual and predicted results of their four- and 10-year program against statewide performance targets for safety, smooth pavements, bridge preservation, and travel speeds. Each prepares a performance-based scenario that identifies total resource needs to meet performance targets, and a fiscally constrained scenario that sets forth projects to be built with available revenues.

Institution of this performance-based approach has helped achieve a major increase in preservation investment since 2003. Resource gaps between the two scenarios are reviewed with the state legislature. Having a consistent system for defining needs has enhanced legislative funding deliberations and public dialogue.

Missouri

Evolution of MoDOT's Performance Measurement System

The Missouri Department of Transportation's (MoDOT) first efforts with using organizational performance measures began in July 2001. These initial measures were intended to communicate with employees, partners, and customers; assist with business planning and management; and provide support for strategic decisions. In 2003, the performance measurement system was refined to semi-annual dashboard and quarterly scorecard measures.

Beginning in January 2005, MoDOT's performance measurement system evolved into the Tracker. All performance measures support 18 customer-defined tangible results — results that the Department has identified as its essential services. The tangible results are assigned to senior managers who monitor and devise strategies to improve their results related to the measures. This approach allows departmental goals to be linked to division and work unit actions.

In conjunction with the quarterly Tracker publication, Tracker meetings are held with all senior managers and supporting staff to review the measures, strategies, and departmental progress towards improving performance. The Tracker and its implementation are by all measures successful, and in the spirit of performance management, the effort is improving with every iteration. Distribution of the Tracker is widespread due to its publication on MoDOT's web site. Members of Missouri's legislative body, Missouri's Governor's Office, AASHTO, FHWA, other state DOT staff, and news media are among the groups that regularly access MoDOT's Tracker.

The department-wide Tracker also is replicated on the district and division unit level to achieve implementation of the Department's performance management throughout. This not only provides a direct link between business units and the overall Department goals, but keeps communication lines open within units so all are aware of the direction and actions needed to enhance performance.

The largest impact of using measures is MoDOT's culture change, which has now strongly linked departmental performance with success within the measures. The measures focus the organization's efforts on delivering the Tangible Results to MoDOT's customers. As the Tracker matures, MoDOT employees are able see the results of their work and understand how individual and unit performance rolls up to organizational success.

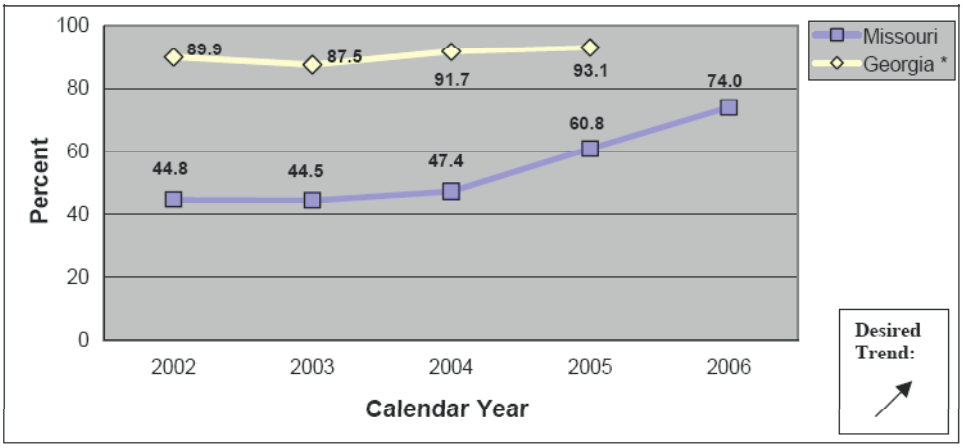
Scope of Performance Management Efforts at MoDOT to Date

MoDOT applies a holistic approach to performance management that links policy development, budget, program and project delivery, operations and communication to customer service and organizational improvement. Senior leadership developed MoDOT's strategic direction (comprised of a Mission, Values, and Tangible Results) during a strategic advance in November 2004. MoDOT's Tangible Results encompass nearly every area of operation and support service. Planning, programming, budgeting, program and project delivery, as well as operations are all

addressed with Tracker performance measures. The relevance of the Tangible Results has been affirmed by data obtained from multiple customer and stakeholder satisfaction surveys.

Based on quarterly meetings, and a focus on linking measures to tangible results for customers, MoDOT's performance management efforts have now become embedded throughout the Department. The Tracker drives short-term action planning and allows for agile decision-making. Longer-term planning is captured in the Missouri Advance Plan (Long-Range Transportation Plan) and the Statewide Transportation Improvement Plan. These efforts are linked directly to measures and strategies within the Tracker. This performance management approach supports and defines the Department's direction. Similarly, MoDOT's budgetary process began including measures since 2003 from the performance measurement system to provide background information for program funding.

Percent of Major Highways in Good Condition



Positive Results from Using Performance Management

MoDOT has realized several positive results from using its performance management system. From a fiscal, operational, and customer satisfaction standpoint, progress has been made. With the quarterly presence of the Tracker for performance monitoring of the Smooth Roads Initiative, 74 percent of major highways are now in good condition, up from 46 percent in 2004. With the Tracker efforts in monitoring worker performance, Missouri's total lost workdays per year in 2007 is 75 percent lower than last year's total, declining from 248 in 2006 to 61 lost workdays in 2007. This results in a healthier work staff and lower medical costs due to work-related injuries. MoDOT overall customer satisfaction has risen from 68 percent in 2003 to 70 percent in 2006 and reaching 79 percent in 2007.

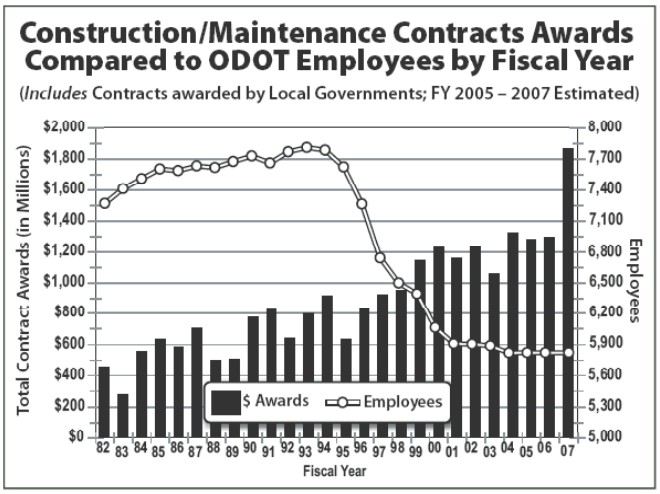
MoDOT's Tracker also has drawn the attention of Missouri state government. The Missouri State Government Review Commission recommended MoDOT's Tracker be adopted by all state agencies as a model performance measurement system. The Department feels strongly that the coordinated Tracker effort has helped move MoDOT forward in improving performance, accountability, and service to its customers.

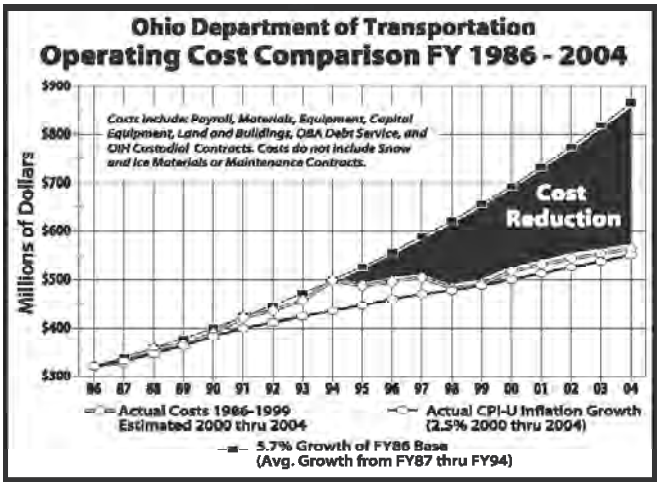
Ohio

The Ohio Department of Transportation has been formally using organizational performance measures since it underwent a major reorganization and reengineering effort in 1995. This effort, tied with a new vision for a transportation agency, reinvented the purpose of the Ohio Department of Transportation, decentralized and streamlined the organization and focused on processes and results. The graphic "Construction/Maintenance Contracts Awards Compared to ODOT Employees by Fiscal Year" shows dramatic results from the reengineering efforts as the number of employees has dropped by 25 percent and the value of construction projects have doubled.

Key measures were identified to monitor pavement and bridge conditions, highway maintenance operations, design and construction functions, and other important division results. The Organizational Performance Index reflects 65 of these key measures. It serves as a common reference to support resource allocation decisions, process improvements, as well as individual performance reviews.

Demonstrating organizational performance was a critical element in the state budgeting process. The Department established several years of tightly controlling operating and labor costs, while simultaneously doubling the value of construction projects delivered to the traveling public. These operational "savings" were then redirected to support additional capital projects, further improving systems conditions and safety. The chart of "Operating Cost Comparison FY 1986–2004" shows one benefit in the cost reduction derived from identifying the 5.7 percent annual growth of the Department's operating costs and dramatically reversing this growth in 1995, while continuing to hold this cost static for four additional years. Communicating and measuring the commitment to manage operational costs across the organization was critical and involved decisions and prioritization of efforts by everyone. Afterward, operating costs have been deliberately held to half of their prior growth rate.





Improved measurement and forecasting of asset conditions, safety and congestion needs, coupled with a proven track record of internal efficiencies, aided in garnering additional resources through a six-cent motor fuel sales tax increase. The Jobs and Progress program, funded by the additional gas tax revenue, resulted in unprecedented growth in the delivery of new projects to

reduce congestion and improve highway safety, while simultaneously maintaining a commitment to sustain the conditions of the existing transportation system.

The conversion of technical data and subjective evaluations into easy to understand performance indicators has been an ongoing challenge for many transportation agencies. To be effective, these indicators need to focus on results, provide timely and actionable feedback, and address the focus of the customers and the agency. The Department's experience has seen that the establishment of performance measures, followed up by an organizational commitment to affect these measures, can help support substantial change and improved services.

Numerous examples of excellence have resulted from the implementation of performance measurement as attested by several levels of success with the Ohio version of the Baldrige Quality Assessment. This includes two districts distinguished at the highest level of quality commitment, on par with the best of private sector.

Michigan

At the Michigan Department of Transportation (MDOT), asset management and performance measurement are integral to their business processes. Asset management is an efficient and cost-effective way of strategically targeting resources.

Over the past decade, MDOT has developed strategic goals on a system-wide basis, which it is now close to achieving. Having just completed a new SAFETEA-LU-compliant Statewide Long-Range Plan, based on intense public involvement, the Department is about to embark on a new and more encompassing round of goal setting and performance measurement.

Policy Goals and Objectives

In 1998, MDOT developed its first business plan, or strategic plan, to direct and unify the focus of the organization.

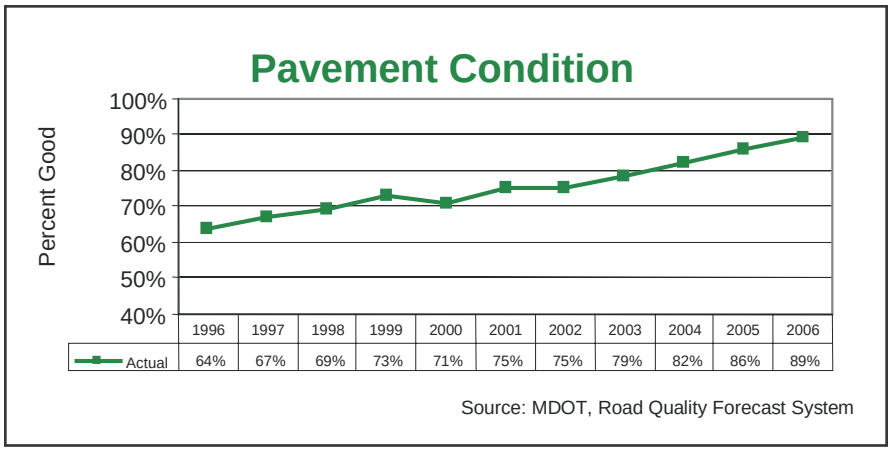
Just after that, the State Transportation Commission and the Michigan Department of Transportation responded to public demand for better highways by adopting these goals for the highway system under MDOT's jurisdiction:

- Ninety-five percent of freeway pavement and 85 per-cent of non-freeway pavement in good condition by 2007; and
- Ninety-five percent of freeway bridges and 85 percent of non-freeway bridges in good condition by 2008.

An additional goal was set for the Department in 2003 when it adopted the National Highway Traffic Safety Administration and U.S. DOT safety goal of one fatality per 100 million vehicle miles of travel.

Data Collection and Analysis

The amount of data collected and stored at MDOT is, as at any state DOT, voluminous. One important way to make use of data is to measure progress toward a goal. By using tools such as MDOT's Road Quality Forecast System and a project prioritization model, the Department has been able to develop annual programs and projects targeted toward achieving the pavement and bridge goals.



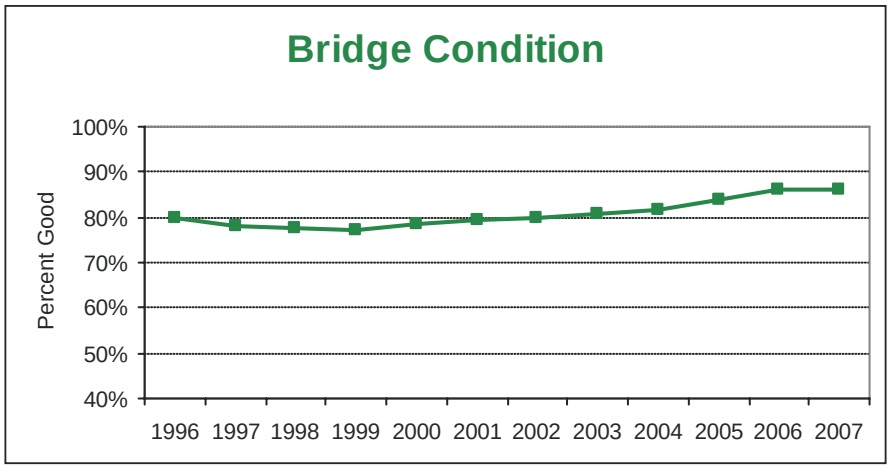
In addition, MDOT has been working over the past three years with local road agencies to consistently measure the condition of all Federal-aid eligible pavements, regardless of whose jurisdiction they are under, as part of a unifying asset management effort. MDOT also has worked closely with the Michigan State Police and the Office of Highway Safety Planning to ensure the timely completion and accuracy of safety data in order to measure progress toward the safety goal.

Planning and Programming

In 2001, MDOT conducted a series of public meetings and worked with a Customer Advisory Group to develop its State Long-Range Transportation Plan (SLRP) under TEA 21.

Working toward the achievement of the pavement and bridge goals included in this plan drove MDOT over the next several years. Funding was adjusted and projects were selected for the State Transportation Improvement Program (STIP) based on the pavement and bridge goals. In particular, bridge funds were increased and expansion projects were postponed or curtailed so the Department could make greater progress.

With regard to the national safety goal, since 2004, Michigan has consistently exceeded 90 percent seatbelt use, and has been among the top six states nationwide. In 2004, Michigan had the second largest reduction in the number of crash fatalities, and had another 3 percent decrease in crash fatalities in 2005.



MDOT has also set additional goals for its business processes. The sense of urgency in delivering the program within scope, within budget and on schedule has allowed MDOT to consistently let over 90 percent of its programs in the first six months of the year and let nearly 95 percent of programmed projects on schedule. In addition, the program has been delivered with cost overruns of 3 percent or lower for the past five years. In 2005, the percent difference for extras and overruns was actually a negative number, i.e., final contract costs were actually just under original cost estimates.

What's Next?

In 2006, MDOT completed a new Strategic Plan. Although the organization's mission remains the same, one of the plan's new goals reflects the need to provide integrated transportation systems, something reinforced by the public involvement effort for the Department's latest long range transportation plan. As a result, MDOT is now considering adopting new system performance measures. However, one of the other discoveries of the recent public involvement effort helped to confirm that there is a financial gap between the public's expectations and MDOT's ability to deliver. The state's seismically shifting economy, increasing gas prices, and decreasing travel and revenue have stalled the agencies ability to make further significant change.

American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

444 North Capitol Street, NW
Suite 249
Washington, DC 20001
(202) 624-5800
Fax: (202) 624-5806
www.transportation.org

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