Emerging Performance Measurement Responses to Changing Political Pressures at State DOTs: A Practitioners' Perspective

By

Daniela Bremmer
Director of Strategic Assessment
Washington State Department of Transportation
PO Box 47374
Olympia, WA 98504-7374
Voice: 360-705-7953
Fax: 360-705-6813
Email: bremmed@wsdot.wa.gov

Keith C. Cotton
Special Projects Manager
Washington State Department of Transportation
PO Box 47331
Olympia, WA 98504-7331
Voice: 360-705-7446
Fax: 360-705-6833
Email: cottonk@wsdot.wa.gov

Brooke Hamilton
Transportation Planning Specialist
Washington State Department of Transportation
PO Box 47374
Olympia, WA 98504-7374
Voice: 360-705-7969
Fax: 360-705-6813
Email: hamiltb@wsdot.wa.gov

Revised version submitted November 16, 2004
Originally submitted July 30, 2004
Word count: 7,215 (excluding references, tables and figures, including abstract)
Tables and figures: 1 (equivalent of 250 words)
Total, words and tables: 7,465

ABSTRACT

Performance measurement is an evolving practice. All state DOTs have used some aspect of performance measurement for analyzing system uses and conditions as part of the engineering and planning disciplines. Yet, the business management process and accountability aspects of the performance measurement field have really just emerged in the transportation industry in the past decade. State DOTs operate under heightened political pressures and accountability mandates drive change in performance measurement practices.

This paper illuminates important trends driving the evolution of the field that need greater attention in future research. The emerging purposes and needs for performance measurement and performance management have substantial implications for practitioners and managers.

The paper first describes the authors' research purpose and method and presents a "generational model" for conceptualizing the stages in performance measurement development in transportation agencies. Next, the authors note the major pressures that drive performance measurement development, and summarize the most pertinent responses uncovered by their research. The paper concludes with recommendations for advancing the field and opportunities for further research.

This report does not critique specific practices or judge state capabilities. Its intention is to describe emerging trends and needs driving the changing practice of performance measurement at state DOTs, using illustrative examples to help practitioners understand the state of the field and prepare for potential challenges ahead.

INTRODUCTION

In the federal system in the United States, states can be laboratories for innovation, testing, and creativity. Good ideas can spread, be adapted, and take root in other states. Bad ideas can be abandoned. The concept holds true for performance measurement. National research attention and a growing network of practitioners allow states to learn about the successes and problems encountered by others, and refine their own approach to fit their needs.

WSDOT recently conducted a survey of state performance measurement practices. This paper is WSDOT's summary of the trends, needs and challenges driving the changing practice of performance measurement at state DOTs. There's no one-size-fits-all approach to performance measurement, but from state-to-state there is a strong sense of common pressures and promising responses. This paper aims to capture these commonalities, while illuminating divergent and evolving practices. The authors describe the trends around the nation with the hope that continued documentation can help practitioners and managers improve their agency's development and use of performance measures.

The state DOT performance measurement literature is fairly consistent on the benefits, challenges, and suggested recommendations for performance measurement implementation (*1*, *2*, *3*, *4*). A missing element, however, in recent literature is a frank acknowledgement of the various realities emerging as the discipline of performance measurement struggles to mature. States are responding to their individual situations in interesting ways that merit plain-language discussion at the performance measurement *practitioner* level. This paper is intended to stimulate that discussion.

The paper first describes WSDOT's research purpose and method and presents a "generational model" for conceptualizing the stages in performance measurement. Next, it notes the major pressures that drive performance measurement development and summarizes the most pertinent responses to those pressures illuminated by WSDOT's research. The paper concludes with recommendations for advancing the field and opportunities for further research.

SCOPE AND INTENT OF WSDOT'S RESEARCH

Rapid turnover in DOT leadership and the evolving nature of the discipline means that capturing a lasting, accurate picture of state DOT practices is difficult. This paper represents WSDOT's second major research review of other state practices in three years, and many changes have taken place during that time. The constantly iterative process is in part related to several interrelated factors changing DOTs as institutions (*5*) and in part related to the growing use of measures and developing nature of the discipline. This paper is meant to provide a snapshot of the key directions and needs.

Purpose and Research Method

In 2004, WSDOT's Strategic Assessment Office (SAO) – the office responsible for performance measures for the agency – updated its library of performance measure materials in order to stay abreast of innovative performance measures activities in the United States and elsewhere.

As the research progressed, the SAO found that practitioners in many states sought information on the realities of the political and organizational environment and their implications for performance measurement efforts. This paper aims to meet this need and stimulate the national conversation about performance measures at state DOTs.

Staff created a series of questions and used Internet searches, email inquiries, and phone conversations to learn informally about as many states as possible in a limited timeframe. The result was an updated electronic "state of the practice" file filled with agency documents and interview notes for 25 states. The update includes the majority of states discussed in recent literature, those states that WSDOT found interesting in prior research, and some states not usually discussed at the national level.

The primary repository of this research is WSDOT's performance measures library Web site, launched to aid researchers and interested practitioners in learning more about other state practices (www.wsdot.wa.gov/accountability/library/). The site also includes summaries and the questions that guided the research and interviews. Additions, questions, and corrections are welcome.

The SAO also provided preliminary information from its research for attendees of the International Performance Measures Scan, a thirteen-member panel co-sponsored by AASHTO and FHWA to learn about performance management approaches in Canada, Japan, Australia, and New Zealand. Insights gained from WSDOT's initial review of the international practices documented in the scan are included in this paper where pertinent.

INSIGHTS INTO THE PERFORMANCE MEASUREMENT FIELD

WSDOT's research of the performance measurement state of the practice led staff to several insights into the challenges currently facing the field. States are at different stages in their performance management efforts, which can be described using the following generational model to understand how a performance measurement approach evolves over time.

The Generational Model of Performance Management

Performance measurement is an evolving practice. All state DOTs have used some aspect of performance measurement for analyzing system uses and conditions as part of the engineering and planning disciplines. Yet, the business process improvement and accountability aspects of the performance measurement field have only emerged in the transportation industry in the past decade (*6*).

As the concept of measurement has expanded, states have tried to follow suit. Some have made the leap to track organizational performance, in order to improve business processes or to demonstrate accountability. Some have taken the step to integrate measures into strategic frameworks aimed at focusing the organization on a few key outcomes. These agencies are often focusing on the "new" generation of performance measures, described as more outcome-oriented, more integrated with strategic goals and objectives, and more focused on quality and customer service than the input and output measures in the past (*3*, *6*).

DOTs can be vastly different from state to state, managing transportation systems that vary in complexity and scope in distinctive political and economic environments. Despite a few similar shared functions, newer management approaches, including performance measurement, sometimes scarcely resemble one another. Different stages of implementation among state DOTs has created a noticeable performance measurement "generation gap" that has been observed nationally. In WSDOT's analysis, this "generational model" is useful for determining the loose generational progression of performance measurement that exists among most states.

The First Generation Agency: "Traditional" Infrastructure and Organizational Measurement

The first generation agency often develops measures in response to internal Total Quality Management initiatives or to specific legislative requirements. At the same time, it may already have robust, established measurements in traditional system planning and program areas, such as preservation. These "standard" measures that track basic system performance and organizational process improvement are useful for their specific program and project decision-making purposes, but are usually not meaningfully linked to other agency processes. Agencies at this stage usually lack a strategic measurement framework and are only beginning to use performance measures to define progress in meeting long-range plans or shorter-range business plan goals.

It's important to note that while many state transportation agencies are required to report performance information to their legislatures or respond to performance-based budgeting requirements, these mandates should be considered distinct from measures that states develop for their own use as active management tools. The majority of states in WSDOT's informal survey viewed their performance-based budgeting effort as more of a task than a tool, and in most cases, the data provided to legislators or governor's offices was not used for decision-making or resource allocation.

The Arizona DOT is an example of a first generation agency. Although ADOT has a sophisticated project delivery tracking process, there appears to have been no framework or general connection of performance measurement agency-wide in the past. Currently ADOT is working measures into the long range planning process that tie to program management. The Alaska DOT and the Delaware DOT are other examples; both of these agencies are required to submit performance-based budget documents.

The Second Generation Agency: Hierarchy of Measurement

The second generation agency generally has a proliferation of measures as part of a framework or hierarchy for measuring the agency's performance. These measures are usually based on a traditional planning framework and are often long-range measurements that link to mid-range strategic and or short-range business plans. This allows the agency to tie measurement areas together in a strategic orientation that is used by agency leadership and managers to track business functions and planning goals.

Measurement areas eventually expand to include difficult-to-measure higher-level outcomes, societal goals and customer expectations. As practices evolve, measurement systems can grow increasingly complex, making results difficult to communicate. Another distinguishing feature of the second generation could be a well developed public reporting tool that communicates the results of the measurement scheme to meet legislative, public or agency needs.

The Missouri DOT, an example of a second generation agency, is working to establish an overall framework and recently implemented a performance-based strategic plan. MoDOT has adapted a hierarchy that aligns agency goals, objective and performance measures. MoDOT began producing quarterly performance reports to assess the strategic plan for agency management in 2001. It recently adopted a semi-annual report called the *Dashboard Measurements of Performance* that links the three priorities of the agency's strategic plan and will eventually tie into the long-range transportation plan. The Florida DOT and Maryland DOT are other examples, as both of these agencies have long-range measurements that link to short-term strategic goals.

The Third Generation Agency: Catalyst-Driven Adaptation

As an agency learns from its performance measurement experiences and successes, and perhaps gleans lessons from other agencies, it refines practices and implements new methods and reporting mechanisms as appropriate. Sometimes, however, a significant catalyst changes an agency's priorities and agenda, making it necessary for the agency to respond with a new approach to meet new needs. Typical change catalysts include new agency administrations, governmental changes (i.e. a new governor), funding crises or increases, or new state or federal requirements.

The agency is generally able to re-tool and adapt an established system in response to changing agency priorities and external pressures but, more importantly, it has the ability to proactively use performance measures to set its agenda and more effectively communicate its needs. Third generation agencies are at the forefront of using dynamic approaches that provide real-time information responsive to the needs of agency leadership and the state's political context and place high value on public accountability.

Recognition of the complexity created within the traditional planning framework, and exploration of alternative ways to measure and communicate performance, also distinguishes the third generation agency. The narrow focus of the third generation agency's performance measurement system, compared to earlier, less strategic systems, is a key distinction. While continuing to seek viable indicators for broader societal planning goals and outcomes, the agency tends to focus on building effective measurement systems and communication tools centered on agency responsibilities and investment decision needs.

States like Minnesota, Ohio, and Washington have experienced this evolution and are adapting to respond to changing needs and drivers. They have also tried to address the complexity of measures created in their second generation phase. The New Mexico DOT is also moving toward a strategic approach by re-tooling and re-organizing its previous performance report *The Compass*. *The Compass* was celebrated as an agency accountability tool but was eventually thought to be "data rich, but information poor," due to the sheer volume of measures (85) and lack of a cohesive framework dictating which measures were most important. With the latest strategic plan update at NMDOT, *The Compass* has been narrowed down to 5 strategic objectives supported by 40 measures. Each division in the agency is responsible for developing a business plan to ensure success of the strategic objectives.

Pressures that Drive Change: The Political Context

Leadership Changes

Leadership changes at the top of a transportation department can sometimes significantly alter the agency's performance measurement processes. In a strategic sense, performance measures can be thought of as dynamic tools used to improve an agency's political position, and some incoming leaders recognize this and prioritize this function of performance measures. Others tweak around the margins or fundamentally change performance practices in a way that matches their sensibilities and experience.

A good example of a state that changed practices with the appointment of a new secretary is the Pennsylvania Department of Transportation. PennDOT has been widely recognized for its performance measurement practices, (*7*) and its system featured several useful products for agency executives and staff. In 2003, the secretary retired after serving eight years as the agency head. His replacement has significantly overhauled the department's performance measures organization and changed several reporting products. The agency is now transitioning into a revised performance management system, despite the previous eight years of institutionalization.

California's executive office recently turned over and the new governor, Arnold Schwarzenegger, created a task force to measure the performance of all state agencies. The California Performance Review (CPR) was described as an "examination of what government does and how it is done, to provide the citizens of California with the best services in the most efficient way." A Blue Ribbon Panel was been appointed to the California Department of Transportation as a result. This process spurred Caltrans to reach out to other state DOTs in an effort to identify planning, comparative, and other performance measures. The CPR Report, released in August 2004, contains four volumes of 279 government issues and more than 1,200 recommendations (report.cpr.ca.gov).

Practitioners should expect to adapt their performance measurement systems in response to leadership changes. The process and measurement framework should have the flexibility to quickly adapt to or fold in new requirements. It is essential to recognize that performance measurement is only a tool to aid decision-making. Even for high profile and well-established performance measurement efforts, institutionalization may not be a realistic expectation or a probable outcome in light of frequent political turnover. Practitioners need to anticipate such change and be ready to make adjustments accordingly.

Funding and Politics Drive Measurement and Reporting

New funding or a legislature's view that a state DOT needs greater oversight can lead to political pressure to implement performance reporting or enhance efforts in certain areas. In states where funding increases or fiscal management and credibility issues take center stage, strategic performance measurement aspects will likely need to transform in reaction.

Responding to public and legislative credibility issues, the Missouri Highways and Transportation Commission recently assembled a Blue Ribbon Panel Committee to assess the Missouri DOT's accountability and to provide more public input into transportation programs. The panel focused on department and commission governance, state and federal monies allocation, and the new statewide transportation plan. The panel's report, issued in November 2003, presents 12 recommendations for MoDOT to provide increased accountability, credibility and efficiency.

As part of the effort to improve public and internal communication, MoDOT adopted the *Dashboard Measurements of Performance* described in the second generation agency discussion. Project delivery measures are used to assess progress toward a key goal of the agency: "finishing what we've started." The report will eventually tie into the long-range transportation plan as well.

In another example, high-profile allegations of fiscal mismanagement by a previous administration at Virginia DOT led to severe credibility issues for the agency. Facing a large budget shortfall, the agency was ordered to undergo an audit by the governor and had to delay and delete a large portion of its scheduled construction projects. This crisis prompted the agency to focus on improving its program delivery process, leading to performance reporting systems oriented to completing projects. The Project Dashboard and the Quarterly Report Card, examples of this approach, have provided traction for VDOT and received much recognition.

Ohio and Oregon are both moving in the direction of project reporting, due to the passage of new funding packages. Ohio's aspiration to develop an online dashboard as a mechanism for project reporting has become a high priority for the agency due to a recent gas tax increase called the Jobs and Progress Plan (an annual $250 million construction program for 10 years). The 2003 Oregon Transportation Investment Act (III) is causing Oregon DOT to look at project planning, managing and monitoring in a new light, due to the need to track newly funded projects.

WSDOT's quarterly performance report emerged in response to a credibility crisis with the legislature and media and the need to demonstrate accountability. This effort, combined with other communication initiatives in the department and a funding crisis in the state, led to the 2003 Transportation Funding Package, which raised the gas tax and several fees to support an expanded highway and rail construction program, as well as transit and demand management programs. In response, WSDOT created a new section in the quarterly report that provides details on all aspects of the delivery of the newly funded program.

External Mandates for Benchmarks and Performance Measures

Several state legislatures have in the last few years passed laws mandating that state DOTs report on progress toward established goals and benchmarks for the transportation system. Even though some benchmarks may be outside of a state DOT's direct influence, or may be broad outcomes dependent on the actions of numerous public entities and individual travel behavior, the agency is still given responsibility to collect and produce the information.

A state law passed in 2000 mandates the Maryland Department of Transportation to produce an annual report for the Governor and the Maryland General Assembly on progress toward transportation goals and benchmarks for the long-range Maryland Transportation plan and the shorter-term Consolidated Transportation Program. Six- and 20-year performance targets are established in the report. The law includes a mandate to discuss induced travel, the share of non-SOV modes, congestion indicators, the cost effectiveness of investments for congestion and the cost per passenger line. *The Annual Attainment Report on Transportation System Performance* has 45 measures and 30 are tied to the state's transportation plans.

Oregon law requires Oregon DOT to produce an annual performance report. ODOT's report links several agency measures to the statewide benchmarks developed by the Oregon Progress Board, a major cross-agency initiative to achieve broad outcome targets in many aspects of society and economy. One ODOT measure, the number of jobs sustained as a result of construction expenditures, supports the ODOT goal to provide a transportation system that supports livability and economic prosperity in Oregon *and* the Oregon Progress Board benchmarks one and four – promoting rural jobs and net job growth.

The Washington State Legislature recently enacted statutory requirements for the state Transportation Commission to establish benchmarks in nine policy areas: safety, pavement condition, bridge condition, traffic congestion, driver delay, per capita vehicle miles traveled, commute mode share, administrative costs, and transit cost efficiency.

Legislative mandates for performance measurement and benchmarking seem to be proliferating. It can be particularly troublesome when statutory requirements prescribe specific agency measures or benchmarks that may not be targeted to agency functions or management needs and are difficult to refine or abandon once legislated. Data tracking and reporting processes can consume valuable resources while the measure and its associated data may lend little help to legislative bodies and the agency in managing programs more efficiently. Agencies may not be able to influence such mandates, but it legislative bodies should be encouraged to give an agency flexibility in selecting measures or revising measures if they don't prove useful. Agencies should consider offering voluntary performance reports to head off such statutory requirements whenever such requirements are looming.

Performance Audits and Reviews of State DOTs

A state DOT that uses and publishes performance measures that hasn't been affected by a performance audit probably will be soon. Performance audits seem to be more prevalent recently and are reaching the point of ubiquitousness. Information supplied by the National Association of State Auditors, Comptrollers and Treasurers (NASACT) for the year 2000 suggests that programs for efficiency and economy audits were being conducted in about 37 states (unpublished data, NASACT, 2003).

State DOTs that have had early experiences with some type of performance audit or performance review include Delaware, California, Washington, New Mexico, Texas, and Michigan. Other states that more recently joined the ranks include Kentucky and Colorado.

As widespread as they are, the processes and methods to conduct such audits can be subjective and vary greatly, making them difficult to manage and prepare for. Nevertheless, information gleaned from earlier audits as well, as more recent examples, suggest that DOTs can take steps to prepare for such audits. Common themes and lessons from various audit findings include:

- Standard, audible agency documentation must support all published results;
- Agency measures and data used must be current, complete and authentic;
- The computation of measurement results must be fair and accurate;
- Agency quality control processes must be in place, preferable with one individual in charge of quality oversight;
- The better defined the audit scope and the narrower the review focus, the less subjective the process and results seem to be; and
- Broad-brush audits seem to provide little insight and opportunity for real reform.

While each audit is unique, information on overall lessons learned and a comprehensive collection of approaches and findings would be very useful to practitioners. This information is not readily available at this time and should be considered for future synthesis reports.

RESPONSES BY STATE TRANSPORTATION AGENCIES: CURRENT AND EMERGING TRENDS

State DOTs respond to political pressure with customized accountability approaches that fit the state's needs and context. Several of the most notable trends that represent important challenges for state DOT performance measurement practitioners are discussed below.

The New Performance Measurement Framework: Responding to the Political Environment

For many DOTs, the first generation of measurement efforts came out of the quality movement. Measures were applied to improve productivity and efficiency, by enhancing work processes focused on customer input and satisfaction.

Traditional performance measurement frameworks are aligned with vision, mission, societal and/or agency goals, objectives and strategies. In addition, agencies try to differentiate between input, output and outcome measures, while trying to respond to internal and external customers along a multi-modal plane - a daunting if not impossible task. This has led to a cumbersome and unmanageable system of performance measures in the past. Measures were fragmented across the agency and siloed based on function. Despite significant investment in time and resources, results were difficult to track. Improvement processes took a very long time and were difficult to quantify and even more difficult to communicate to customers.

In today's environment, however, performance measurement has taken on new role and meaning. Measurements are used to enhance and demonstrate accountability and transparency. The focus is still on customers, but not only in the traditional sense of public and system users. The face of the customer is changing to include increasing numbers of oversight boards, legislative bodies or commissions, and executive branch-led review committees.

As a result more and more organizations are moving towards simplifying performance measurement and seek to find new and better ways to communicate performance. This seems particularly relevant for third generation performance measurement organizations, including New Mexico, Minnesota, and Washington, as well as FHWA. The prescription for accountability is demonstrated performance and effective communication of results in real time (figure 1**)**. Success depends on meeting the needs of all three factors; one becomes ineffective without the others.

In this model, measures are targeted and customized to three key audiences: legislative and other oversight bodies who make funding decisions; the opinion-makers and media; and internal agency management. Washington DOT has applied this approach with encouraging results. The agency uses a self-created Performance Journalism method of reporting in its quarterly performance report, the *Gray Notebook*, which is the agency's central tool for

reporting. This approach has been well received by legislators and media and it also has become an effective agency management tool (*8*)**.** Virginia, Missouri and New Mexico faced similar pressures and responded with dynamic performance reports that meet the needs of these key audiences and political realities.

To be effective, performance information needs to be provided in a timely manner and in terms that people can understand. But that must not lead to oversimplification. On the contrary, legislative bodies increasingly make project-based funding decisions and want frequent and detailed information on scope, time and budget (see related discussion below on "communicating performance").

The authors of this paper do not advocate for the total abandonment of traditional performance measurement frameworks. However, it will be critical to adapt these approaches to be more dynamic and responsive and create additional tools to meet the accountability challenges of today and tomorrow. Many organizations are trying to meet these new demands of performance measures and seek tools to aid them in this process. While one size does not fit all, successful practices and examples exist that could be further synthesized, shared and built upon.

Communicating Performance

No performance measurement system is complete without effective communication. In fact, the communication aspect is nearly as critical as the performance itself. Many states know of the struggle to communicate well with external stakeholders, such as the legislature, the media, the transportation industry, local and regional jurisdictions, and the public. The charged political context around accountability in transportation makes performance communication one of the most salient issues in the performance measurement field today.

Communicating project delivery performance in particular has become especially important across the country. A new funding package typically moves an agency in a project performance tracking direction. In some cases, demonstrating the ability to report on project delivery is required politically before receiving new funding. Describing on-time and on-budget progress is critical for repairing existing public credibility issues; it gives the legislature and the public the opportunity to track how state dollars are spent and to anticipate how much the transportation system will be improved.

Dashboards

Several states have established or are moving toward "dashboard" style reporting to communicate at a glance the status of targets met or unmet. This snapshot view generally uses a green, red, or yellow light to describe a result.

Virginia DOT is setting the standard for the interactive, on-line dashboard approach as it reports on its construction program. VDOT's Project Dashboard shows the status of project advertisements, construction deadlines, cost changes, and work orders using green, yellow, and red lights. Users can find specific district, corridor, and project information on VDOT's Six-Year Program.

The dashboard idea also manifests in paper reports. The Minnesota DOT's internal *District-Metro Performance Data Summary Report* uses statewide and district-level dashboards to show performance for pavement and bridge conditions, construction, snow and ice removal, traffic management, and fleet maintenance versus targets, linking performance to the business plan to support the budget and other decision-making processes. The agency's *Departmental-Level Business Plan Measures and Targets* incorporates measures from the long-range statewide plan and sets two-year targets for reducing the gap on selected measures.

Several other states, including New Mexico and Ohio, have expressed interest in developing a similar dashboard-reporting tool.

Agency Report Cards, Web sites, and Reports

Several states have an externally oriented, highly visible performance reporting process. Typical audiences include oversight and policy commissions, the governor's office, the legislature, and the public. Agencies typically make their performance data available and accessible through public reports and the World Wide Web.

The Florida Transportation Commission produces an annual report for the governor and legislature called the *Performance and Production Review*. The report contains 19 primary measures and detailed project delivery

information for the Florida DOT. In addition, the Florida DOT's *Short Range Component* is an annual report of performance in implementing the 2020 Florida Transportation Plan. It includes both system and organizational measures that track progress toward long-range planning goals.

VDOT's Quarterly Report Card, presented to the Commonwealth Transportation Board and posted on the agency's Web site, shows the agency's performance on its "core business outcomes" by presenting the percent of construction and maintenance contracts completed on time and on budget.

WSDOT's *Gray Notebook* is presented to the state transportation commission, posted on the Internet and distributed around the state to legislators, tribal governments, major media outlets, and transportation interest groups. The agency's "Accountability" Web site includes a subject index that allows users to see the results of all published performance measures (www.wsdot.wa.gov/accountability/graybookindex.htm).

Challenges for Practitioners in Project Delivery Reporting

Many agencies find it challenging to define and deploy performance measures that track the different dimensions of the delivery process. Doing so includes defining measures that track design quality, cost estimating and scoping; advertisement, award, and other project milestones, including completion; the schedule, scope and budget of the construction process; the quality of the project itself; and a post-implementation analysis and system benefit results.

This level of reporting forces many agencies to reevaluate organization alignments and capacities. Traditional separations of functions and organizational silos have to be overcome to make effective performance reporting possible. Project engineers and construction offices often find the added burden of comprehensive data tracking, the new level of transparency, and more frequent reporting cycles difficult.

Despite these challenges, few tools are available to track and communicate project delivery performance. The dashboard approach, as one of the few actual applications of project performance reporting, will continue to gain in popularity – especially as agencies seek and receive new funding packages and experience pressure to show accountability for taxpayers' money. However, this approach will need to be balanced with the increasing need for specific project delivery details that many oversight bodies find necessary.

System outcomes are also important to consider. It is quite possible to delivery ineffective projects very well. Although it is difficult to isolate the system effect of a particular project, practitioners should try to show the benefits that have been delivered and, perhaps more importantly, learn what types of projects provide the greatest lasting effects for their cost. The next generation of project delivery measurement could incorporate this kind of analysis.

Aligning Employee Performance and Attitudes with Agency Mission

Several states have focused on increasing the link between individual employee effort and overall agency performance. The "soft" approach consists of training and face-to-face meetings to overcome employee resistance and increase employee buy-in of new performance management initiatives. The "hard" approach involves identifying units, managers, and staff members responsible for delivery of certain outcomes that contribute to the agency's overall performance, and holding them accountable for their contribution.

Building Employee Buy-In

States have grappled with the challenge of building employee buy-in initiating a new performance-based direction. Resistance in such situations is sometimes attributable to a mentality of staff that they will outlast or "ride out" the new demands coming from a new agency head, legislature, or gubernatorial administration – the "We Be" syndrome ("We're here now, we'll be here later – after you're gone").

After several years of planning and externally oriented performance measure development, the Minnesota DOT is currently focused on building a firm foundation of employee buy-in. MnDOT's face-to-face-reporting approach works at the operations level, where unit managers conduct meetings with staff to discuss results.

Employee Performance Assessment

Employee performance assessment links employee and agency performance. The link is established by establishing "ownership" or responsibility to individuals, senior staff, or units for implementing a particular strategic direction. The "owner" is then held accountable for the achievement of the agreed-upon goals and objectives. Several states are using this approach at varying degrees of implementation.

In this regard, Ohio DOT is probably the most advanced state. Every biennium Ohio prepares a business plan that describes its strategic initiatives, system condition targets, and capital budget. From the business plan comes an action plan for the members of ODOT's "Career Professional Service." Individual performance for these personnel (non-union employees, managers and executives) is compared to the action plans, which establish a basis for promotions, demotions, pay raises or reductions and probationary periods. Ohio's Organizational Performance Index (OPI) is used to monitor progress in attaining goals. The OPI is an overall index of operations in key focus areas that rolls up to agency-wide and district office performance.

Whatever approach is taken to orienting and motivating employees around key agency goals, it is essential that agencies devote some effort to working with employees so that staff will support the process and ultimately, accomplish the desired results.

An Emerging Performance Measure Approach: Before and After System Analysis

Interestingly, while the trend shows an increasing number of state DOTs measuring project delivery performance, published measures primarily address the on-time and on-budget concerns of legislators and others, rather than actual effect of the project on the system. As pressure for funding resources grows, state DOTs will need to clearly demonstrate the benefits of their activities. Safety improvement and congestion "relief" projects are usually prioritized by benefit-cost analyses, but rarely do public agencies in the United States take the extra step to collect and/or show data demonstrating the outcome of the project: improved safety or mobility. There is some movement in this direction; for example, WSDOT recently analyzed 21 safety projects for before and after collision results. While it can be challenging to collect data in a long enough timeframe or to isolate specific variables to support improvement conclusions, it is worthwhile to demonstrate the value-added by state DOTs.

While few before and after studies are conducted in the United States, they are valuable elements of the performance measurement systems in Japan and Australia, as the International Performance Measures scan discovered. Staff in Japan and Australia regularly collect and analyze data showing the effects of implemented strategies or projects on selected performance measures. The results of these studies act as feedback to the decision-making process and for determining the likely results of similarly adopted actions in other parts of the region (unpublished summary, Meyer, M., "Trip Summary: International Scan on Performance Measures: British Columbia, Japan, Australia, and New Zealand," FHWA/AASHTO).

Using Performance Standards for Private Contracts

A topic that has received close attention in recent years is the outsourcing of services traditionally provided by DOT staff, paired with poorly developed contract scopes and performance standards. As agencies struggle to provide quality services with diminishing resources, the media, executive branches and/or legislative bodies often look at outsourcing in the hope to gain efficiencies and reduce cost.

Maintenance Outsourcing

States like Virginia, Florida, and Texas and the Province of British Columbia have outsourced all or portions of their highway maintenance work. Other states may follow suit. However, audits of highway maintenance outsourcing programs have found that these types of programs do not always meet cost saving and level of service expectations (*9*). These shortcomings can be directly linked to the lack of historic activity based cost data and underdeveloped contract performance specifications, monitoring and analysis. Under mounting pressures to perform with fewer resources, states will need tools to assess and communicate performance and efficiencies by developing solid contract performance measures, standards and benchmarks.

Performance-Based Construction Contracts

A similar theme emerges when examining construction project delivery standards and performance needs. As indicated earlier, many state DOTs are under significant pressure to demonstrate that they can deliver projects within

an expected scope, time and budget. Projects are also expected to be delivered with minimal impacts on safety and congestion and without disruptions to the traveling public.

Some states are already beginning to define specific performance expectations and build performance-based standards into contracts. In the area of pavement rehabilitation, states are moving towards defining smoothness standards. For example, Arizona DOT uses an International Roughness Index (IRI) target and associated contract incentives and disincentives based on final smoothness ratings achieved by the contractor. Similarly, Virginia DOT employs a performance standard for smoothness for new construction and maintenance resurfacing (*10*).

While this paper does not advocate for pavement smoothness, congestion or safety targets in construction contracts, these types of contract performance specifications or standards cannot be implemented without advancing the current state of project delivery performance measurement and analysis in partnership with agency contract partners and the construction industry at large.

RECOMMENDATIONS FOR MATURING THE PERFORMANCE MEASUREMENT PRACTICES OF STATE TRANSPORTATION AGENCIES

In their performance measurement systems, states use different aspects of the discipline – transportation planning and engineering, business management, and public administration (*6*)– depending on their political and organizational needs. The field itself is immature and unstable – greater maturity would be characterized by consistent terminology, a robust network of practitioners that regularly shares information and best practices, institutionalized use of performance data in decision-making, and a set of critiqued and accepted principles and practices.

Need for Consistent Definitions

Inconsistent terminology plagues the performance measurement field. The term *benchmark* is an illustrative example. Some states use the term to denote a specific quantitative target that has been set for a particular measure. Other states use the term to describe a comparative performance measure that is used to show the performance of a particular system or organizational component – pavement smoothness, for example – against the same component in other states. Moreover, the traditional business sense of the term involves examining a leading organization's *processes* and attempting to mimic them as appropriate.

Beyond the problems associated with comparing system conditions and uses among states, which are well-documented, differing uses of terms from state to state and even within states leads to confusion and poor understanding when states try to learn and apply good practices. Practitioners should establish an acceptable, authoritative glossary so terms can be used consistently.

Need for Information-Sharing and Networking

Several state DOTs are re-tooling or implementing a new performance measurement framework. Development of a new approach is greatly enhanced by a review of other state practices. Tennessee, Colorado, and Missouri, for example, recently conducted "best practices" studies to inform their own efforts. Missouri's effort focused on creating an inventory of the performance measures used in other states (*11*), as did Colorado's work (unpublished Excel spreadsheet). Tennessee hired a consultant to note and describe 25 general trends in performance measurement structures at state DOTs (*2*).

Fragmented, individual efforts to catalog practices and measures, such as those in Tennessee and Missouri, may assist individual states but doesn't necessarily advance understanding in the field. Uncoordinated research is also a duplication of effort. Note that at least three states (including Washington) conducted similar research during the winter of 2003-2004 – this points to a lack of available information that states consider necessary to "be in the know" and move forward on performance management initiatives.

Practitioners around the country – especially those just beginning in new measurement positions or leading a new initiative – would benefit greatly from a national, frequently updated catalog of measures, structures, and ideas at each state and in each topic area, easily searched and examined by all states. Additionally, a stronger national network of performance measurement professionals needs to be developed, so that researchers and analysts can quickly contact appropriate experts in various topics. A national organization, such as FHWA, AASHTO, or a

TRB committee, should take the lead to manage a sustained, frequently updated program in these regards. Essential to the success of such an effort, of course, is attention and feedback by the practitioners themselves. At the very least, Web sites established as repositories for DOT performance reports should be kept up-to-date with relevant links and the latest information.

Development should initially focus on networking with those states not among the "usual suspects" in research reports and national discussion. Conferences and committee activities provide good networking opportunities for some, but not all good ideas and practices are always represented, especially for those states with limited travel budgets or those that simply do not consider it important to attend conferences. Existing reports seem to consistently highlight the same states, but there are many other states doing useful work under the radar screen.

The TRB Performance Measurement Committee, in conjunction with FHWA, recently established a Performance Measurement Exchange Community of Practice Website. The electronic bulletin board allows "people with common interests, goals or expertise to share their experiences and knowledge, collaborate on work, identify and exchange best practices and advance the state-of-the-art in their field" (knowledge.fhwa.dot.gov/cops/pm.nsf/home). This is a good start. This potentially useful resource should be more broadly utilized, for both networking and information sharing.

Need for More Analysis of Strengths and Weaknesses of Existing Practices

When agencies demonstrate successful public reporting systems, they became *de facto* national models that other states notice and attempt to emulate. There's nothing wrong with borrowing good ideas, and states will continue to do what they can to meet their political and business needs, but practitioners and performance measurement literature need to begin to focus on critiquing the strengths and weaknesses of various approaches. The inventories and recommendations supplied by recent literature are helpful to an extent, but for the field to mature, practitioners in this field would be assisted greatly by more analysis of the effectiveness and integrity of established reporting practices, organizational structures, and specific performance measures.

CONCLUSION

While state DOT may be at different generational stages in their implementation of performance management, all will continue to face external pressures that ultimately drive changes in performance management practices and approaches. Public and political pressures for enhanced accountability and demonstrated performance will not abate and agencies have to find tools and resources to respond. In this environment, performance measurement has taken on a new role. Measurements are not only used to manage programs but also to enhance and demonstrate accountability and transparency.

This charged political context makes performance communication one of the most prominent issues in the field today. Effective performance reporting is crucial; it lends credibility, supports funding increases and possibly heads off less desirable measures mandated by the legislature. Related to this, project performance reporting is a growing practice. Aside from dashboard reporting, practitioners have few tools and demonstrated practices available at this time. Another element of this political context is the increase of performance audits by legislative and other oversight bodies. Insights into audit approaches are limited and are identified as a need for future synthesis.

Under mounting pressures to perform with fewer resources, states are urged to implement outsourcing practices. This in turn requires solid contract performance measures, standards and benchmarking tools to realistically assess and communicate performance and efficiencies. This is another aspect of the performance measurement field that requires further development.

Performance measurement practices are still very much evolving and the political pressures for accountability provide additional challenges for the field and for practitioners who seek solutions and insights. To this end, consistency in terminology; enhanced networking opportunities, information sharing, and access to updated best practice information; and robust analysis of existing and emerging tools is needed to support the advancement and maturation of the field.

REFERENCES

1. Kassoff, H. Implementing Performance Measurement in Transportation Agencies. In *Performance Measures to Improve Transportation Systems and Agency Operations*, TRB, National Research Council, Washington, D.C., 2001, pp. 47-58.
2. MTG Management Consultants. *Best Practices in Transportation Department Performance Measurement Structures.* Office of Strategic Planning, Tennessee Department of Transportation, 2004.
3. Poister, T.H. *NCHRP Synthesis 326: Strategic Planning and Decision Making in State Departments of Transportation*. National Cooperative Highway Research Program, TRB, National Research Program, Washington, D.C., 2004.
4. TransTech Management, Inc. Strategic Performance Measures for State Departments of Transportation: A Handbook for CEOs and Executives. TRB, National Research Council, Washington, D.C., 2003.
5. Lockwood, S.C. Change Management in State DOTs. Presented at the CEO Leadership Forum for State Departments of Transportation, Minneapolis, MN, 2003.
6. Baird, M.E. and R. E. Stammer, Jr. Measuring the Performance of State Transportation Agencies: Three Perspectives. In *Transportation Research Record: Journal of the Transportation Research Board, No. 1729*, TRB, National Research Council, Washington, D.C., 2000, pp. 26-34.
7. Yew, C., and P. Friedman. Measuring the Road to Improvement. *Public Roads*, Vol. 66, No. 3, 2002. www.tfhrc.gov/pubrds/02nov/04.htm. Accessed July 28, 2004.
8. Bremmer, D. Performance for Public View: The *Gray Notebook*. Presented at the Western Association of State Highway and Transportation Officials Annual Meeting, Kalispell, MT, 2004.
9. Ribreau, N. Synopsis of WSDOT's Review of Highway Maintenance "Outsourcing" Experience. www.wsdot.wa.gov/maintenance/pdf/outsourcing.pdf. Accessed July 25, 2004.
10. Richter, C.A. The Case for Performance Standards. *Public Roads*, Vol. 67, No. 6, 2004. www.tfhrc.gov/pubrds/04may/03.htm. Accessed July 25, 2004.
11. Geyer, R. *Performance Measurements: A Comparison of State Transportation Departments*. Strategic Planning, Missouri Department of Transportation, 2004.

LIST OF FIGURES

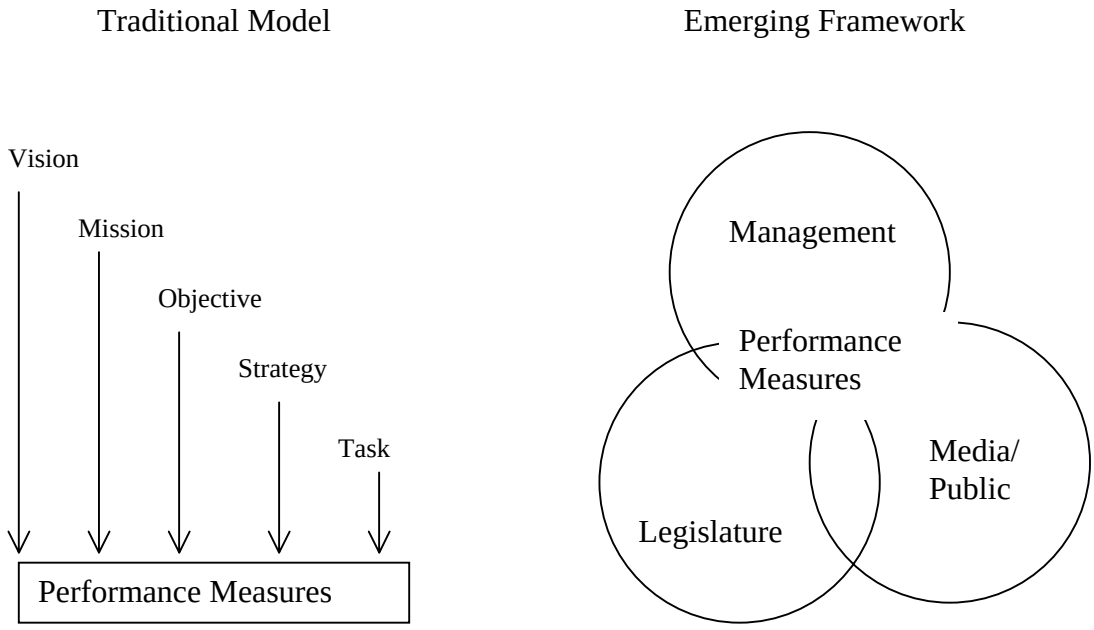

FIGURE 1 The emerging framework that drives performance measure development