

# 2009

# CEO Leadership Forum

## Performance-Based Management in State DOTs

### A Summary Report

#### Conducted By:



CENTER FOR  
TRANSPORTATION STUDIES  
UNIVERSITY OF MINNESOTA

#### In Association With:

American Association of State Highway and  
Transportation Officials (AASHTO)

Federal Highway Administration (FHWA)

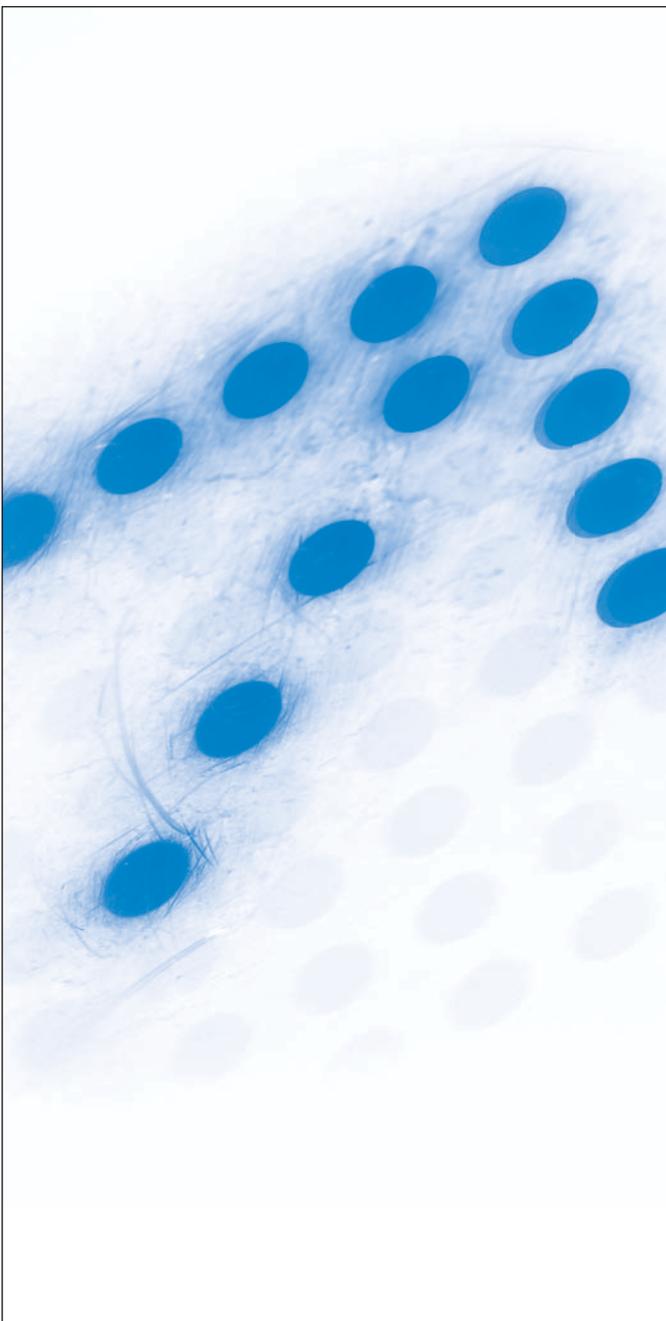
Transportation Research Board (TRB)

#### With Funding From:

National Cooperative Highway Research Program  
(NCHRP)

April 19–21, 2009

Coffman Memorial Union  
University of Minnesota Campus  
Minneapolis, Minnesota



# 2009

# CEO Leadership Forum

## Performance-Based Management in State DOTs

A Summary Report

### Conducted By:



CENTER FOR  
TRANSPORTATION STUDIES  
UNIVERSITY OF MINNESOTA

### In Association With:

American Association of State Highway  
and Transportation Officials (AASHTO)

Federal Highway Administration (FHWA)

Transportation Research Board (TRB)

### With Funding Support From:

National Cooperative Highway Research  
Program (NCHRP)

## To the Reader,

This report summarizes the 2009 CEO Leadership Forum for state departments of transportation (DOTs). Over three days, transportation leaders from across the nation explored the use of performance-based measurement as a way to achieve greater transparency and make efficient use of limited resources. The forum brought together some of the best transportation minds in the country to develop action plans to support CEOs and their staffs.

Participants heard the latest research in performance-based management and shared their experiences. This report summarizes the presentations and conversations we had with each other and lists the 20 action plans produced at the forum. We are committed to following up on these directions.

The results of this forum will help prepare transportation chief executive officers for moving their organizations to the next level of performance management.

—Allen Biehler

President, AASHTO

## Contents

Introduction .....	1
State of the Practice .....	2
State DOT Experiences .....	6
Conversations .....	10
Forum Summary .....	16
Reactions and Implications .....	18
Working Groups; Closing Remarks .	20
Action Plans .....	21
Participants .....	25
White Paper Executive Summary . . .	A1

## Introduction

The fourth CEO Leadership Forum for state DOTs, held April 19 through 21, 2009, centered on expanding the use of performance-based measurement as a way to achieve greater transparency and make efficient use of limited resources. The discussion focused on four areas:

- Current trends
- Leadership experiences
- Best practices
- Research and other initiatives for AASHTO, TRB, and FHWA

Prior to the event, Cambridge Systematics surveyed the states to determine the degree to which states were using performance-based management and to find examples of best practices. The results of the survey were compiled into a white paper and used as background for discussion.

Three speakers gave opening remarks: Robert Johns, director of the Center for Transportation Studies (CTS) at the University of Minnesota; Tom Sorel, commissioner of the Minnesota Department of Transportation (Mn/DOT); and Allen Biehler, secretary of the Pennsylvania DOT and current president of the American Association of State Highway and Transportation Officials (AASHTO). Johns, who served as forum moderator, commented that there was good representation from around the country at the forum and great leadership to discuss the issues around performance-based management.

Sorel tied performance-based management to public trust. “Our world in Minnesota changed drastically August 1, 2007, with the collapse of the I-35W bridge in Minneapolis,” he said. “The public trust and confidence ... in our abilities to deliver for their safety and mobility changed, not only for us but for DOTs around the country. That’s the world we live in today.”

Mn/DOT rebuilt the new I-35W bridge in 11 months, which created new expectations, Sorel continued. “Now is the time to rebuild public trust and confidence, and I view a sound performance-based management

system as the key to do that.” The forum is a critical part of this process, he said.

Biehler set forth the purpose of the forum. “We will come out of this forum with greater understanding and a direction,” he began. “The economy is a challenge, and we need to determine how to spend the stimulus dollars. At the same time, we need to demonstrate that we are good stewards of those dollars.”

Biehler continued: “This forum is about looking ahead and thinking about new roles. And this forum is our chance to hear about research and from each other. Performance-based management is going to move us forward and in new directions.”

Congressional leaders have stated that they plan to have more performance measures in the authorization. “We will be at the table for those discussions,” Biehler said. AASHTO is also encouraging the use of performance measures through the AASHTO Standing Committee on Performance Management.

“I think that performance-based management is the key to gain greater public trust for a much greater transportation infrastructure investment,” Biehler declared.

“This forum is really is about sharing experiences, both good and bad,” he concluded. “Sometimes you learn more from difficult experiences.”



Robert Johns



Tom Sorel



Allen Biehler

“I think that performance-based management is the key to gain greater public trust for a much greater transportation infrastructure investment.”

— Allen Biehler

## State of the Practice

An executive summary of the white paper is in the appendix of this document.

The full white paper is available for download on the AASHTO

Web site:

<http://tinyurl.com/CEOLeadership>

To set the stage for the forum, three speakers presented the state of the practice in performance management: Pete Rahn, director of the Missouri DOT and chair of the AASHTO Standing Committee on Performance Management; Lance Neumann, president of Cambridge Systematics, Inc.; and Randy Halvorson, senior associate with Cambridge Systematics.

### AASHTO Plans and Challenges

“I believe so strongly in what performance measurement and management can do for an organization,” Pete Rahn began. “We need to collectively grow in this direction because our industry needs the benefits that I believe this system can provide for every organization.”

Rahn described what he sees as the challenges that CEOs face when implementing performance-based management. One is the frequent turnover at state DOTs. “The typical CEO serves 28 months,” Rahn said. “On average, we are there a relatively short period of time. A new CEO typically comes and almost always reorganizes and determines a new direction.” The organization may be used to these fluctuations, but the turnover creates variability within the organization and among the states, which makes it difficult to have a consistent national direction.

“We also have wild fluctuations in resources at federal and state levels,” Rahn continued. A sign of this is the forum attendance: “Today we have 20 states represented, but typically there are 40.” Federal resources can fluctuate wildly—especially so now with the stimulus dollars. New federal programs promise new funding, but the dollars do not always follow

the expectations, he said. Revenues are also fluctuating because of changes in fuel efficiency and vehicle-miles traveled. And inflation erodes real dollars.

“Along with the funding fluctuations comes the roller coaster of public approval of the state DOTs,” added Rahn. “If the system is improving, that tends to mean our public opinion is improving. If the system is declining, that means that public opinion is declining too.” The political climate is a related factor beyond an agency’s control.

Another challenge is the variety of reporting structures, which creates different priorities for each state. For example, Texas DOT reports directly to a commission, which means it has different priorities from a state like Minnesota in which the DOT reports directly to the governor and has greater interaction with the state legislature. “Somehow,” said Rahn, “we’re supposed to meld all together to create an industry view and approach that is going to benefit all of us.”

Other challenges include the public’s dislike of taxes or fees and a related distrust of government. Much of the public does not trust government to be efficient and to use dollars in its best interest, Rahn said.

A final—and overwhelming—challenge is the deteriorating transportation infrastructure, he said.

The challenges need to be looked at together with emerging national issues such as the authorization bill and the economic downturn. “There are lots of needs, and none of the problems are going to be simple to solve,” he said.

What can we do? AASHTO created the



Pete Rahn



Lance Neumann



Randy Halvorson

Standing Committee on Performance Management to help states develop policies and tools for performance management, Rahn said. He described what performance-based management can deliver for DOTs:

- **Direction.** “It’s a tremendous tool that can offer guidance for an organization regardless of turnover of CEOs,” he said.
- **Efficiencies.** Performance-based management identifies both good and bad policies and processes. By implementing measures, an organization will gain an efficiency boost for a year or two because staff will produce improvement in that measured area. “Over time, you will have to create strategies to improve, but just starting will produce efficiencies,” he said.
- **Greater accountability and transparency.** An agency and the transportation industry will stand out with a performance-based management program.
- **Credibility.** CEOs can demonstrate what a DOT is delivering by producing a summary document that shows exactly how an organization is performing, “warts and all.”

“What will all of this produce? I believe that it produces more resources,” Rahn concluded. “Because ultimately, these are the things that the public will demand before they trust us with more resources. I believe that these things are absolutely necessary if we, as leaders within this industry, are going to truly begin to solve problems and not resolve ourselves to accepting band-aids. I hope that you will come away with and have a good understanding [of performance-based management] and ...carry [it] to your own organization.”

John Horsley, AASHTO executive director, asked Rahn for examples of goals and actions plans. Rahn responded: “I’m not a big fan of setting goals. I think the best way to approach this is to insist on continuous improvement.” His goal, within his organization, is to be the best in the country. “We benchmark against the best and then measure against that,” he said.

### **State of the Art in State DOT Performance Management**

Lance Neumann defined performance management as a practical tool to connect broad policies to actions, help evaluate performance, guide resource allocations, track performance over time, and report results, both good and bad. “The key,” he said, “is to do it by creating aspirational targets and answering the question: If you have more resources, what can we expect from [them]?”

Neumann conceded that collecting data is an issue, but he advocates starting performance-based management even if the data are not perfect. Every state is doing some level of performance management, he said, but not many have a comprehensive program.

“Organizations need to start by defining goals and objectives,” he said. AASHTO has proposed a list of performance measures as well as national goals and objectives that include preservation, interstate commerce, safety, congestion reduction and connectivity, system operations, and environment. But measurement will look different in each state, depending on priorities.

Typically, Neumann said, statewide plans contain goals and objectives. The white paper (see appendix) lists several state examples of performance measures, goals, and objectives. In Minnesota, goals and objectives focus on safeguarding what exists, operating the system better, and making the organization better.

“When determining performance measures, choose quantifiable metrics that help you track progress toward goals and objectives,” Neumann advised. “There’s a long list of candidate measures. That’s good and bad news. The good news is that you have many options, but the bad news is that you can spend a lot of time analyzing which measures to track. At some point, you need to bite the bullet and choose which to use, acknowledging that over time, those measures will likely change,” Neumann said.

Neumann recommends states use common selection criteria that include:

- Implementation feasibility

“I believe that these things are absolutely necessary if we, as leaders within this industry, are going to truly begin to solve problems and not resolve ourselves to accepting band-aids.”

— Pete Rahn

“The purpose of measuring is not just to know how a business is performing, but to enable it to perform better.”

— Lance Neumann

- Policy sensitivity
- Usefulness for decision making
- Applicability to broad audience

“When establishing targets, you need to connect performance management with results to set realistic expectations,” Neumann continued. Sometimes this means making tradeoffs between targets and available resources, he said. Performance in one area may decline when focus is shifted to a different area, which may precipitate debate about where resources should be directed.

“Performance management provides a direct connection between goals and resource allocation,” Neumann said. “A performance management system considers agency and stakeholder priorities, tradeoffs, and funding constraints to drive better performance.” California and Montana have very strong performance measurement linked to goals and resource allocation.

Neumann defined performance monitoring as tracking agency performance and demonstrating accountability. “Monitoring often, consistently, and in a way that is understandable to the public is key,” said Neumann. Many states are moving information to the Web and offering live information.

“High-quality data [are] critical to successful performance management, but it is hard to make a case for more data,” explained Neumann. “However, the availability of good data reflects the quality of a performance management program.” Virginia has a good data business planning process that defines roles and responsibilities.

“Performance management is the state of the practice now, but not everyone has taken steps to create comprehensive programs,” Neumann said. “But, states are well positioned to take the next step. In each state, the performance management focus will differ, but there are many examples to build on.” Additionally, performance and accountability

are key themes in the federal authorization bill. “It is a challenge but we are ready for it,” he said.

“The purpose of measuring is not just to know how a business is performing, but to enable it to perform better,” he concluded.

### **State-Driven Performance-Based Management: State of the Practice**

Randy Halvorson outlined the results from a state DOT survey that asked 10 questions about the status of performance management. Eighteen states responded to the survey. Halvorson offered common themes, highlighted observations, and gave some insight about what a national performance-based program might look like.

All responding states said the suggested areas for development (national goals, performance measures, performance targets, data systems, federal reporting, relating measures to funding allocations, incentives/disincentives, and accountability) are all important, but some need to be addressed now and some later.

“States need to be involved in establishing national goals, and the federal approach must take into account state experience,” Halvorson said. He observed some concerns: since measures will be used to compare the states, the data need to be consistent; outcome measures will be useful only when linked to resource decisions; federal reporting requirements need to be defined.

Some states are aligning performance measures to funding allocations, but how this will affect federal funding is unclear. “We should avoid disincentives and offer incentives such as regulatory relief, delegated authority, and funding flexibility,” he recommended.

States ranked their progress with the proposed AASHTO goal areas (preservation, freight/economics, safety, congestion, system operations, and environment). All had goals for preservation and safety but fewer had them for the other areas. “We need to start with an understanding about the experiences of the states,” Halvorson remarked. Solutions include establishing a performance-based

project prioritization process, developing robust modeling capability for forecasting, developing data business plans, and automating manual computations.

“All the states responded that we should make state comparisons ourselves before others do,” Halvorson noted. “According to the survey, states are willing to be compared, but there is still some uneasiness with this concept.”

Survey responses indicate that there are some legal restrictions in some states regarding funding allocations. Some equity formulas attempt to assure that funds are directed to the areas that need it most.

Halvorson said organizational and cultural hurdles are real obstacles to implementing performance-based management. Barriers including accepting a culture of accountability, defining measures consistently, reporting over time, overcoming the “worst first” strategy, breaking down a “region owns” budget mentality, and convincing local officials.

One solution is sustained executive leadership. “Since performance management can’t be accomplished in 28 months,” he said, “CEOs need to find internal champions to institutionalize it.” Other ideas: Encourage broad participation when selecting measures and demonstrate use of measures in decision making. Learn by doing. And, since no system is perfect, make adjustments over time.

“The state CEOs reported that performance-based management makes their job easier,” Halvorson continued, because decisions backed by fact are easier to defend. In addition, performance measurement provides a basis for establishing common service levels and for calculating consistent resource needs. It also makes the process more transparent when combined with good communication.

Several states, such as Washington and Minnesota, have made links between performance-based management and budget requests. States are using performance-based management to tell the public about what they are going to do, what they want to do, and what they are not going to do, Halvorson said. This approach doesn’t guarantee more

funding but makes it easier to make requests.

Other issues that the states highlighted: Identify a small number of measures for national goals, allow states to select additional measures to support local control, start with available measures, and link organizational performance to individual performance.

“Since performance management can’t be accomplished in 28 months [the average term of a CEO], CEOs need to find internal champions to institutionalize it.”

— Randy Halvorson

# State DOT Experience with the Six AASHTO Performance Management Categories

“You need to demonstrate congruency in your words and behavior to employees and external partners.”

— Tom Sorel

Six state representatives were asked to present on one of the recommended six AASHTO performance management categories. What follows is a summary of those programs.

## Safety Performance

**Tom Sorel, Commissioner, Minnesota DOT**

“There’s a common theme of trust. Performance management leads to trust,” Tom Sorel began. “You need to demonstrate congruency in your words and behavior to employees and external partners.”

Safety is a strategic direction for Mn/DOT, Sorel said. He outlined his state’s performance-based management program for safety: Toward Zero Deaths (TZD). The data-driven program began in 2003 as a way to coordinate safety efforts. Performance targets are critical for driving improvement.

“We take a strong leadership role and drive the safety discussion across the state,” he said. Local governments are an important part of the program. “Toward Zero Deaths completely changed the discussion of safety in the state,” Sorel said. “It was a transformation.”

The program’s critical emphasis areas include increasing seat belt use, reducing impaired driving, improving design and operation of intersections, reducing lane departures and aggressive driving, increasing driver safety awareness, and improving information systems. (Ed. note: A primary seat belt law was passed in May 2009.)

One strategy was the 2005 Speed Management Project, which raised speed limits on 905 miles of two-lane, two-way roads from 55 to 60 mph, increased enforcement, and included public education. The results were a 12 percent reduction of vehicles exceeding 70 mph in the Twin Cities metro area and a 30 percent reduction in Greater Minnesota. Mn/DOT provides funding to the State Patrol to assist with this effort, Sorel said.

The Toward Zero Deaths Program has produced impressive fatality reductions, Sorel said. The program created data-driven strategies and emphasized county partner-

ships, which were critical to the success of the program, he concluded.

## Highway Preservation

**Kirk Steudle, Director, Michigan DOT**

In 1997, the Michigan State Transportation Commission set several big goals, Kirk Steudle said. At the time, 64 percent of the roads were rated in good condition. The commission set a new goal that called for 90 percent of the roads to be in good condition across the entire system, and it created similar goals for bridges.

The Michigan Legislature then created a 10-member Asset Management Council representing more than 600 agencies across the state and 120,000-plus miles of roads. “The Asset Management Council has been viewed as the honest broker,” Steudle said. In a recent presentation to the legislature, the council explained its data in economic terms: “For every day you delay investment, you are losing \$1 billion worth of asset value in your road and bridge network.’ That got a lot of attention,” he said.

Michigan DOT uses a variety of tools for its road stewardship program. “We do a significant amount of life-cycle analysis. Any road that needs more than a \$1 million investment, we have to do a life-cycle analysis,” Steudle explained.

Michigan also uses a “mix of fixes” strategy to leverage dollars. A big portion of the money goes to reconstruction and rehabilitation, but resources also go to mid-term project fixes to extend road life. The capital maintenance program keeps good roads in good condition, which helps stabilize the network.

Steudle displayed a forecast chart—called the mountain diagram—which shows road conditions and investment. “The chart crosses five CEOs and two governors,” he said, and every legislator has seen it. The year 2002 was a critical time with a new governor, but the Michigan DOT was able to make a case to keep the road preservation program



Kirk Steudle

on track. As a result, the department instituted a program called “Preserve First,” Steudle continued. “We took money to preserve projects and shut down every capacity-building project to preserve 90 percent roads in good condition,” he said.

“We were able to use the forecasting system to justify more money for the system,” he said. Because the legislature was familiar with the mountain diagram and because the data that Michigan DOT had been collecting had been consistent, the legislature understood what would happen to roads if it did not invest in the system. The Michigan DOT has the same type of forecasting system and diagram for bridges.

Michigan DOT has used the data to show the legislature that more money is needed. “We also can show a decline of purchasing power and rising costs,” he said. “Then we connected measures with investment choices.”

### **Operations Performance**

#### ***Dave Ekern, Commissioner, Virginia DOT***

When Dave Ekern joined VDOT, he was impressed by the department’s Dashboard (an Internet performance reporting system), but quickly realized there were three parallel silos of information about the state of the transportation system: one from the governor’s office, one created for the General Assembly, and VDOT’s version. He was able to combine and modify the three so that now the majority of publicly reported performance measures are reported through the new Dashboard 3.0 (<http://dashboard.virginiadot.org>).

Aligning performance measures and language is extremely important, Ekern said. “We also learned that precision and frequency can lead to bad business decisions.” For example, staff became focused on making sure a Dashboard meter didn’t turn red. (The meter, like a traffic signal, monitored agency performance in green, yellow, and red.) District administrators complained that staff in the field were making bad decisions because

they did not want their “meter” to go red. On the flip side, Ekern discovered contractors for a project were not held accountable for the Dashboard status.

As a result, VDOT enhanced the Dashboard [version 3.0] so it now has 41 measures, Ekern explained. VDOT uses customer service measures borrowed from Minnesota. “We also learned that with most of the measures, we are capable of measuring on a daily basis, [but that] is way too frequent.”

Currently, Ekern said, VDOT is facing many cuts to funding and staffing. In March, he went to the public to discuss what services to cut. More than 2,000 people came—and said they did not want any cuts to service. But Ekern also learned that VDOT’s “biggest selling point with the public and legislature is our emergency response service,” he said. “We use our Dashboard 3.0 data and results to focus funding to strengthen equipment and protocols for safety response.”

VDOT’s efforts now center on response time to incidents such as weather, crashes, spills, or terrorism. “VDOT is the last line of defense for the Commonwealth. It is the only agency that can mobilize 4,000 workers,” said Ekern. “This has allowed our organization to focus on the basics such as communications equipment, education and training, establishing duty officers, instituting a systems approach, and technology. We use customer feedback to focus our efforts.”

### **Congestion Performance**

#### ***Paula Hammond, Secretary, Washington State DOT***

Washington State DOT had a well-thought-out plan for congestion mitigation that included a 300-mile high-occupancy vehicle (HOV) system in Puget Sound, a partnership with State Patrol to clear lanes, and money for new projects, Paula Hammond began. A performance audit found that WashDOT operated the system well and had projects in the works to relieve congestion. But the news headline after the audit was that congestion



Dave Ekern



Paula Hammond



Jay Norvell

was “not a priority” for Washington’s transportation agency.

Why? Because maintenance and safety were listed higher. Hammond explained to the legislature that congestion mitigation is important, along with other priorities, but the damage was done.

In response to the audit, Washington DOT created “Moving Washington,” a 10-year investment strategy with three parts: add capacity strategically, operate roadways efficiently, and manage demand to address congestion. The strategy committed to some specific goals. “We would improve travel times by 10 percent, reduce collisions by 25 percent, and improve reliability,” Hammond said. “Which, by the way, caused some people in our agency to be very nervous, but we decided ...to stick our neck out and do some things because we actually think that if you can drive your investments, you can deliver those kinds of outcomes.”

WashDOT long ago adopted transparent management principles; since 2001 it has published the “Grey Notebook” and a “Delay in Congestion” annual update. “For us it has been very important to tell the good with the bad,” Hammond said. “We believe that we have to be consistent with our data and that we have a ‘one DOT’ message. Every communication looks the same, and people start to recognize and trust what we have to say.” Written summaries are included along with the statistics to help people understand the story behind the numbers.

The department strives to help the public understand congestion issues. The local news agencies use WashDOT data from the Web—including the WashDOT logo. “We use plain English and explain it in very simple terms. You know you’ve conquered something when you hear your words come back to you from legislators or local county commissioners,” she said. The Web-based WashDOT information includes travel time reliability and real-time data for different modes of transportation, including HOV lanes.

“We went for 10 years without a revenue increase,” Hammond explained. “Two years

after instituting performance measures, we got a five-cent gas-tax [increase]. We continued to report and to show we could be trusted with the revenue, and we got another nine-and-a-half cent gas-tax [increase] two years later.”

Such success won’t happen without leadership on board, Hammond said. “You also need a team that will demand excellence in data collection and story collection. If you don’t have that, you lose credibility.”

### **Environment Performance**

#### ***Jay Norvell, Chief Environmental Planner, California DOT***

“Our goals and objectives focus on efficient project delivery,” Jay Norvell stated. “This has been most of our emphasis.” The department measures performance by determining its compliance with laws and agreements. It also works toward statewide goals for energy use and greenhouse gas (GHG) emissions.

The sources of the measures include the California DOT strategic plan and the statewide storm water policy, in addition to agreements with FHWA and a National Environmental Policy Act (NEPA) Pilot Program.

Norvell described sample measures for environmental project delivery such as percent of NEPA documents approved within the anticipated completion date and the percent of biological opinions received within 135 days. Sample measures for environmental stewardship include the ratio of wetlands mitigated and the percent of projects with a completed environmental commitment record at “ready to list.”

A Caltrans environmental stewardship program measures areas such as litter removal, acres treated for storm water by constituent, fleet fuel use, use of recycled rubber, and building energy use. The agency has also established environmental targets in areas such as on-time environmental impact statements, compliance with water quality total maximum daily loads, and bankable GHG reductions.

The department has made decisions to ac-

commodate environmental goals and objectives, such as shifting resources to help with storm water permitting. “We’ve redirected resources to areas where we needed to improve environmental performance,” Norvell said.

Results have included measurements that focus on process improvements, improved environmental schedule delivery, and storm water compliance.

### **Economy/Freight Performance**

***Caitlin Hughes Rayman, Assistant Secretary for Transportation Policy, Maryland DOT***

“Transportation and economic conditions are critical to Maryland,” Hughes Rayman said. Continued economic and population growth will increase demand on the transportation network, much of which is aging and near capacity.

“We have an aging infrastructure—some rail tunnels were built in the Civil War,” Hughes Rayman said. “We have congested shared-use corridors...and all of these are critically interdependent.”

By 2035, growth is expected in all modes of travel in Maryland, and truck traffic is expected to double. The state is currently working on a state freight plan that will identify candidate freight projects for focused investment. Measures have been identified in the draft plan, which establishes a holistic approach and promotes the state’s smart growth initiatives and environmental goals, she said.

In addition to the draft freight plan, Maryland has several other tools for performance management, including a statewide plan, an annual attainment report, and a consolidated transportation program. MDOT has developed a mission, vision, goals, and objectives that address challenges and create strategies for the future.

Questions have been raised about freight performance measures and the roles of the private and public sectors in contributing to the freight system. “Work needs to be done

with FHWA and others to develop freight performance measures,” Rayman said. Determining performance measures is complicated for a multimodal system; affordable, accurate data are needed to update plans and improve forecasting.

“We must work with locals and other partners to do corridor-based planning,” she concluded.



Caitlin Hughes Rayman

## Conversations

Forum participants took part in an interactive discussion. These “conversation circles” used a format that incorporated satellite-style seating around an inner ring of chairs designated for speakers. As the discussion evolved, new members entered the circle and others exited. Robert Johns and Gina Baas (CTS assistant director) served as moderators. Participants were asked to answer three questions.

### **Question #1: What are the measures that are most important to you as a CEO or senior executive of a state DOT? How do you use them to change performance?**

Kirk Steudle (Michigan DOT) answered that for CEOs, measures need to be high-level. “In my experience, focusing on a measure like safety all of a sudden gets everyone else focused.”

Pete Rahn (Missouri DOT) said Paula Hammond’s presentation “contained a lot of nuggets” about which performance measures are needed. “When I moved from New Mexico to Missouri, I had no idea if any of my experience in New Mexico would be transferable...[but] the job is almost the same,” he said. “To be successful, you have to deliver what your customers want from you...Choose measures that are important to your customers, which means you’ll be suc-

cessful and you’ll stay in your job longer. And compare, know who’s doing what and use the competition to drive better performance across the board.”

Allen Biehler (Pennsylvania DOT) said he started using several simple measures such as “structurally deficient” to begin a conversation with the legislature, governor, and staff to refocus core business. PennDOT had been measuring for a long time, but its systems were still deteriorating. “By focusing on a few simple statistics, we have made finally a significant change... In other words, use measurement to show what state the system is in and use that to change attitudes,” he said.

One way Steudle used measures was to put into each employee’s individual performance plan a goal to reduce energy consumption by 10 percent. Employees found ways to reach that goal by turning the heat down and lights off at night and turning cars off, among other things. “We pushed that goal onto our employees; they took it on and were creative. Now, they’ve eclipsed that 10 percent goal and are at 20 to 25 percent energy reduction,” he said, and are looking for more ways to reduce energy use.

Tom Sorel (Minnesota DOT) said all measures are important, “but I tend to frame all discussions around safety, both internally and externally.” Winter maintenance is an important part of Mn/DOT’s work, and what hap-



Allen Biehler, Kirk Steudle, Robert Johns

pens during snow and ice control is important to public perception. “The maintenance folks are our ambassadors with the public,” he said. The department uses market research to determine what service levels the public finds acceptable. Sorel also expresses his support of the maintenance crews. “And, as a result, they take pride in their work and do a good job.”

Paula Hammond (Washington DOT) discussed the need to educate legislators about the impacts of their decisions. This year, WashDOT officials explained how much money would be needed to maintain a certain level of service. Legislators “had to recognize that they were buying less service unless they invested more,” she said. “Now, they’ve put more money into maintenance. It’s a mind shift to get them to understand that less money is going to buy less service.”

To Dave Ekern (Virginia DOT), setting the measures should not be a function of the CEO but a function of the process. “I use my board to validate if we have the right mix.” Based on VDOT data, the secretary and the governor decided they want to reduce the amount of bad pavement to 18 percent on the interstates by 2011 and on primaries by 2014. Because of this smooth pavement initiative, Ekern said he needs to find service savings to balance the budget, such as closing rest areas. His board told him this: “We want to have a discussion about whether or not we want to have smooth pavement that quickly if it means we have to close 25 rest areas.” Ekern said it’s the first time he’s been able to have a discussion about how fast pavement deteriorates at current investment levels.

Jeff Paniati (FHWA) posed another question: Are the CEOs ready for comparisons?

“What we’re not ready for is the use of comparisons for funding determinations,” said Dave Leingang (North Dakota DOT). Biehler said, “If you are worried about getting fired for not rating as well as another state, then you need to ask why. Comparisons can be incredibly helpful.”

The availability of information is extensive, said Rahn, and DOTs are already being compared. “But it is important that the data

be apples to apples.” Many comparisons are not valid because the comparative data are not really the same. “That’s what’s going to be important going forward,” he said. “We’ve got to have the same processes for collecting data to make sure the comparisons are fair.”

Hammond added that states need to tell the story behind the data and explain the differences among the states. “Common measures need to be truly common.”

Paniati said a data requirement in the next authorization is “inevitable,” and states need to be ready for comparisons. “To me, the focus of a self-assessment is to offer reasons to improve and help you to understand ‘why’ so you can focus attention on weak areas,” he said.

Rahn said a good role for AASHTO is to help the states to normalize the data between and for the states. “We, as state DOTs, should be working closely together to ensure that we are turning [in] the same information,” he concluded. States should choose a critical number of measures and agree on how to collect the data in order to have valid data for comparison.

## **Question #2: What have been your biggest successes as a CEO in the use of performance measures? What have been your challenges?**

Caitlin Hughes Rayman (Maryland DOT) shared a story from her state. The legislature called for measuring the transit system’s fare box recovery—which is difficult because of the subsidies involved. “You are always subject to comparisons to other transit systems, and you have to look at what makes one of them more successful than another and determine what’s unique about that system. You also have to look at the policy reasons for offering that service even when the fare box numbers are not that great,” she said.

Stuedle admitted that his biggest challenge is pushback within his organization. “Some of the organization will resist and try to wait you out. The best approach is to get in front of the issue. We need to get staff to under-



Steve Simmons

stand that [measurement] is going to happen and we need to embrace it.”

Steve Simmons (Texas DOT) said data aren’t consistent from year to year because of rapidly changing technology. “We were doing random rating, now we’re doing 100 percent rating. Also, we’re using performance measures in our regionalization efforts.” Texas also has put employee performance into its performance measures.



Lee Wilkinson

Lee Wilkinson (Iowa DOT) said his department is struggling with identifying a core group of measures to move the organization forward. “What we haven’t talked about is more the soft side, the number of worker compensation injuries, work days lost, and turnover, and how they play a role in sustaining performance measures.” Iowa also is challenged in getting employees to embrace the concept of performance measures.



John Fuller

Rahn said he analyzed lost work days when he first started in Missouri and found a way to reduce them through performance measures. “There’s a process that employees go through when you are instituting performance measures. First you meet resistance for two reasons: fear of external reactions and distrust of how you will use the data,” he said. Then, once employees understand the measures and the purpose for them, many will want to have their work included in what’s measured. “That’s when you’ve gained acceptance,” he said.



Tim Horner

Simmons noted that coming to a national event like this forum allows officials to realize that states are facing the same problems and the same issues. Roads are deteriorating, but the people and legislatures blame DOTs for inefficiency rather than reflecting on their own role in providing resources. “The performance measures help get the credibility back so they see what we’re doing, how we’re measuring, what they are getting out of it, and getting them to put resources into the transportation system,” he said.

“We have a great concern in Oklahoma that if we’re going to create these performance measures, there needs to be an understanding of what resources we have to work with to

collect and measure,” John Fuller (Oklahoma DOT) said. “If we create these categories and measures, we are going to be compared. If we create the performance measures through AASHTO, then we’ve implied blessing, and it will be viewed as a fair comparison.” But the comparison isn’t a fair one unless states have comparable resources. Oklahoma, a donor state since the inception of the federal fuel tax, would oppose tying funding allocations to measurement without comparable resources, he said.

“We’ve seen successes that are not successes,” said Tim Horner (North Dakota DOT). Last summer the department received objections to its funding request during the budget process. A national report had just ranked the state’s infrastructure highly, so some in the legislature asked why more money was needed. “We had to dissect why we were rated the best but [explain] we had some other problems. Luckily we had some customer surveys that said we were not good on freight,” he said. DOTs need to know how to use their data and respond to challenges, he added.

“The challenge is to take a complicated story and turn it into something that makes sense to the public,” said Bernie Arseneau (Minnesota DOT), praising Washington State’s communication efforts. “The public is probably interested in different things than we are. For example, the public may not be interested in pavement structures, but [they are] interested in the smoothness of their ride,” he said. Performance measures are evolving, and DOTs need to look at how they market their measures and deliver a good transportation system.

Joseph Toole (FHWA) noted that the discussion moved quickly to national performance measures. “The fact is that each of you has developed performance measures to serve your needs, whether in response to the legislature or internal goals. We need to recognize and value those measures. But the challenge will be to reach a consensus to maintain a balance on a national level,” he said. National performance measures are valuable not just

for comparison, but to tell the national story. “Just as you tell a story collectively, it tells a national story about the condition and operation of the national system. I love the idea of ‘don’t give out data without a story’ because that’s equally applicable at the national level as well,” he said.

John Horsley (AASHTO) said we are in a new era, and performance management will drive the national program. Measurement is coming, and it will start in safety and preservation. “I’m almost certain it will happen,” he said.

To gain Oklahoma’s support, Fuller said categories and high-level measures are needed. Some state DOTs receive more state funding than federal funding. If federal-aid funding is to be based on performance, the different resource levels among states need to be considered. “There’s never going to be an equal playing field,” he said. Oklahoma has been successful at improving its state funding without many performance measures, yet what it gained is now in jeopardy because of the economic downturn. “We need to walk before we run and, in the end, don’t want measures tied to funding,” he said.

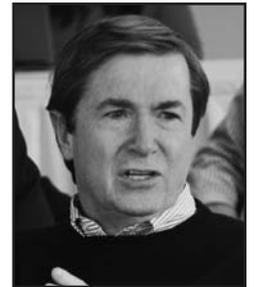
Paniati said we need to get past whether or not measures are coming and decide how to make the change happen in a productive way. Performance expectations have to be linked to available resources, “not that you get more or less, but you can only achieve what you have money to achieve,” he explained. “The challenge will be that only a portion, on average 45 percent, of resources comes from the federal government, and that’s not equal from state to state.” How to deal with that inequality in setting performance goals isn’t clear. One approach could be to set measures state by state, based on each state’s current level of measurement.

Horsley said AASHTO will communicate with congressional staff about measures, but legislation may be moving forward quickly. The forum presentations indicate that there are well-established measures for safety performance and pavement preservation, but in the other four areas there is a lot of work to do to decide what should be measured and how. Congress needs to leave time to build consensus and build expertise, he said.

Toole noted that a research need is to determine how to establish targets and what ap-



Bernie Arseneau



Joseph Toole



Paula Hammond, Tom Sorel



Anthony Kane

proach is reasonable to reach them—it’s not clear if incentives or sanctions are preferable.

**Question #3: What do you and your organization need to implement performance-based management? What research, training, and information are needed from AASHTO, TRB, FHWA, and others?**

Hughes Rayman said the biggest measure facing DOTs right now is the maintenance-of-effort provision in the stimulus bill. “Because we did not have great input into that measure, it doesn’t give us the flexibility we need to reflect the realities of how we do our transportation budgeting. We’ll be judged on this, and we may or may not have sanctions [because of] this provision.”

Anthony Kane (AASHTO) said, “We should not have fear, but we have to tell the story. AASHTO can explore the development of standards, if the states want it.”

The Texas DOT has evolved over time to respond to reporting requirements, and its financial systems are designed to “track pennies spent in these different areas,” added Simmons. “The money will still be the same,”

he predicted, “but ask the states to use performance measures to determine where resources should be spent. For example, Texas is a growing state, so we need to direct resources to address congestion issues, whereas the Northeast has an aging infrastructure and needs money for other [areas].”

King Gee (FHWA) agreed: “We need to go back and talk about what is success. We didn’t talk about what is success in the six different areas.” Congress has never asked for reporting before and yet it is now moving quickly to create measures and define success. “We need to research what is needed to succeed, at a high level,” he said. “We need to keep Congress focused on high-level measures.”

Horsley turned the conversation to issues surrounding climate change. Legislation being crafted would put in place a whole parallel reporting network to reduce emissions, he said. These measures would duplicate efforts by adding transportation reporting to the Environmental Protection Agency.

Gloria Shepherd (FHWA) said her agency expects GHG reduction goals will be assessed. DOTs need to see the connection between GHG and congestion, gain more comfort in how to reduce them both, and do



King Gee



Gloria Shepherd



John Fuller, Lee Wilkinson, Pete Rahn

it quickly. FHWA officials have been meeting with sister agencies on the best way to handle GHG in the transportation planning process. “So far we are in agreement, but we don’t know what Congress will do,” she said. Transportation agencies should work together to reach a common agenda and discuss how to handle GHG, she said.

Rahn said DOTs have the people and information to implement performance measures confidently. There are huge amounts of data—more data for some areas than for others. “But we are data rich and information poor. We need to compile data in a way that gets us information where needed for a performance management system.” Rahn also noted a need for training, since about half the states have not implemented performance management and training is needed to get them up to speed.

Jeff Lindley (FHWA) predicted it will take about two years to determine performance measures and targets. What happens if targets are met—or not—needs to be decided.

Christine Johnson (FHWA) said the stimulus recovery package offers a wonderful opportunity to act now. “Choose some measures,” she urged, and “get them out there. Make some mistakes and correct them. But I think we just need to do it.” She also predicted that Congress would provide the money needed to equip states with measurement technology.

In closing, Horsley noted several concerns. Members of Congress are frustrated with DOT performance in the area of safety. “What happens if Congress sets goals and punishes those who have not achieved their share [of improvements]?” A second concern is whether projects begun under the current rules would be thrown out and replaced with a new list with a new set of rules after authorization. “I don’t think so,” he concluded, “but this is the kind of discussion that will make this upcoming authorization bill interesting.”



Jeff Lindley



Christine Johnson

## Forum Summary

Lance Neumann summarized the key themes of the day. “The state DOT community is in a strong position to implement performance measures. There’s a sense of confidence that would not have been seen five years ago,” he said.

“There was strong support that this is the way we need to do business,” he continued. Although some officials are resigned to performance-based management, Neumann sensed confidence in the ability to do it. Most states seemed willing to “jump in” and start measurement rather than waiting for perfect data.

Many participants said it’s a good thing to be in this strong position because the stakes are going to change, Neumann reported. The federal bill will include performance management, and the range of measures will be broadened. “The time frame is shorter than we like, and the expectations are high,” he said.

### Discussion Themes

Neumann observed three themes from the discussions:

**Teamwork and collaboration.** Teamwork and collaboration inside organizations is needed to align staff and get them committed to performance management—to understanding it and owning it. Collaboration has worked

externally in areas such as safety, but partnerships are not nearly as developed in the other areas. “That’s a challenge moving ahead, but it can’t be a state DOT initiative alone,” he said.

**Communication.** It is critical to communicate internally about what DOTs are doing, why they’re doing it, and what the measures mean, he said. In addition, it is critical to communicate to external stakeholders about measurement, accomplishments, and how performance measures are being used. With external stakeholders, two-way communication is needed to manage customer expectations. “We have to communicate the bad with the good. There will be reasons for the bad and, by being transparent, that will generate credibility and trust,” he said.

**Better performance.** Performance management allows DOTs to learn what’s working and what isn’t, define best practices, and explain differences among the states. Best practice includes having the discipline to conduct post-project evaluations to learn if projects accomplished their goals, he said.



## Conversation Circle Summary

### **1. What are the measures that are most important to you as a CEO or senior executive of a state DOT? How do you use them to change performance?**

“My sense is that there was a difference of opinion on this topic,” Neumann observed. Some felt it was important to have very few measures focused at the highest level issues; others felt a much broader set of measures was more important. Measures can evolve over time, but they need to be sustained over time and administrations.

Comparisons are already here and will continue, Neumann said, “so embrace it.” The question then becomes how to use the data—not to punish and reward, but to drive better performance. Participants also discussed the importance of comparable data.

### **2. What have been your successes as a CEO in the use of performance measures? What have been your challenges?**

An external challenge is having measures mandated by officials who may not understand the issues involved or the different capabilities among the DOTs. Organizations are at different levels of sophistication and experience with performance management. “We heard about the notion of ‘needing to crawl before walk,’” he said, “but we don’t have time.” There was recognition of areas to focus on and the need for a realistic phasing strategy. A challenge internally is getting staff to embrace performance measures. Another challenge concerns data collection: technology will change, and flexibility will be needed.

### **3. What do you and your organization need to implement performance-based management? What research, training, and information are needed from AASHTO, TRB, FHWA, and others?**

“There was a sense that we don’t need more basic research, but that what we need is a lot of implementation, a lot of commitment, and a lot of action,” he said. The shared learning and information exchange that happens at these kinds of meetings is a powerful way to advance state of practice. One of the needs that came out of the discussion was determining the most effective way for the DOT community as a whole to advance the shared learning. Participants suggested training is needed, along with better communication about desired next steps. And technology may have answers for data collection systems.

Neumann concluded with these impressions: “It seems that we are all comfortable with agreeing that we all need a consistent national program. But then we also need to recognize that not all fit one size.” Ultimately, he said, “we hope to learn from what we’re doing and drive better performance. We have to recognize that states are starting from different positions in terms of funding, policy, and experience, and find the appropriate balance. Those challenges will be actions items that will come out tomorrow.”

“We have to recognize that states are starting from different positions in terms of funding, policy, and experience, and find the appropriate balance.”

— Lance Neumann

## Reactions and Implications for Sponsors

**Moderator: Allen Biehler**

**Jeff Paniati, Executive Director, FHWA**

Moving from a process-based to performance-based program is a big task for the FHWA, AASHTO, and the states, said Jeff Paniati. From the industry's perspective, progress toward a performance-based, federal-aid program is moving along at a good pace. But from the Congressional perspective, he said, "we need to pick up speed."

Congress will write a performance-based program in the next authorization: it's not if but how they will do it. "What I worry about is that they haven't heard these discussions and they don't know how hard this is," Paniati said. Legislators may include simplified performance measures that seem logical but don't consider current capabilities. "We need to agree with Congress on an ultimate goal of a full performance-based system and to work with Congress to take a big step toward that goal, but not aim to achieve the entire goal in this authorization bill," he added.

Targets and goals need to be aligned with resources, Paniati continued. And because states start from different places, they can't all have the same targets. "Incentives should not be monetary," he said. Instead, they should involve additional flexibility or less oversight from the federal government.

Paniati was hopeful that a performance partnership could be created between the states and the Federal Highway Administra-

tion, with joint accountability for setting and achieving goals. "I don't want FHWA looking over the states' shoulder, but...we should collectively figure out to get transportation system where it needs to be," he concluded.

**Robert Skinner Jr., Executive Director, TRB**

"Research has had a big role in getting us to this point and getting the performance revolution under way," observed Robert Skinner Jr. Research will be helpful as DOTs deal with the tradeoffs that were discussed such as the span of control, different measures, internal management, and external audiences.

In the short term, research can interpret the impact of the stimulus investment, he said. "You could use research to create a dashboard on the stimulus." For the long term, there is a lot of opportunity to create better aggregate performance measures of the system so that people can relate to something other than their personal route home. It is difficult to translate investments in a region so that citizens can see a difference in their own lives, he explained. "Right now the only way to relate to the public is through projects," yet flexibility is needed for other priorities as well.



Robert Skinner Jr., John Horsley, Jeff Paniati

**John Horsley, Executive Director, AASHTO**

“My conclusion is that we are in the right place,” John Horsley said. It will be an “enormous challenge” if Congress mandates performance measures, “but it is also not all bad.” The states in this room are delivering better for their public, being accountable for results, and doing a better job of managing assets because of this technique. “This is the right technique to advance. Our challenge is how to lead it,” he declared.

What does that mean for AASHTO? “We will be working to improve our capacity, capture best practices, and marshal the resources to train and share,” Horsley said. The organization will try to get the best package possible from Congress. “The AASHTO approach is to give us two years, use a grassroots approach...and have the states set the targets,” he explained.

Horsley said ongoing strategic support from TRB will be needed in many ways. In the technology area, the skills and capacity of the Bureau of Transportation Statistics will need to be tapped for measurement and technology.

“This is the right technique to advance. Our challenge is how to lead it.”

— John Horsley

## Working Groups



Katherine Turnbull



Steve Lockwood



Hyun-A Park

The final day of the forum began with working-group sessions to develop research and action plans. The groups and their facilitators were:

- Designing and implementing a state DOT performance management system: Katherine Turnbull (Texas A & M University)
- Developing a set of national transportation performance measures: Steve Lockwood (Parsons Brinckerhoff)
- Performance measurement approaches for emerging transportation-related policy directions and issues: Hyun-A Park (Spy Pond Partners)

The groups came up with 20 draft action plans, detailed on pages 21–24. The sponsoring organizations will consider these actions for funding and implementation.



## Closing Remarks

Kirk Steudle (Michigan DOT) thanked all those involved for organizing and attending the forum and for their input. “Performance-based management is important and will get more important as the year goes on,” he said.

He summarized the role of AASHTO and the various committees set up to work on performance-based management. “We’re going to work on putting some structure to

this,” he said. A few measurement areas are mature—safety and preservation, and possibly congestion—but the other areas are less defined. “So, we’ve got some work to do to figure those out,” he said. Additional guidance—with more detail for the mature areas, but more of a framework for the less mature areas—will be issued to clarify expectations for DOTs, he said.

# Action Plans

## DESIGNING AND IMPLEMENTING A STATE DOT PERFORMANCE MANAGEMENT SYSTEM

### A.1 Framework/Vision for State DOT Performance Management (White Paper)

**Description:** The value of performance management; vision of performance management system; answers key questions for State DOTs and provides reasons/examples of effective performance management; guides process improvement; defines different audiences, modes, etc., for performance reporting; consolidation of reporting among different “audiences”

**Goals:** Description of where we are today, road map of where we want to go, and reasonable expectations and resources required to get there. Satisfy state, national, and local needs through one system.

**Desired products and outcomes:** Document that ties performance management practices together, where we’re heading; policy document; framework/vision; can lead to more products/work. Seminar/education session(s) for legislators, legislative staff, and others. Paper can result in marketing materials.

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO takes lead for developing “white paper”; all agencies involved, including several states.

### A.2 Capacity Building Program for State and Local Transportation Agencies at Different Stages of Performance Management

**Description:** Capacity-building activities that reflect different stages of development, different spans of control, and different levels of leadership/management within agencies. Several-week training session among members from different state and local transportation agencies. Development of training curricula. Synthesis, case studies, benchmarking as part of training material. Financial and Environmental Resource Centers as model.

**Goals:** Raise standard of practice among states.

**Desired products and outcomes:** Establish a performance management training academy; dedicated “institute” as a mechanism for disseminating information, particularly standardized information; webinars; publications; peer exchanges; domestic and international scans. This is likely a set of activities. Phased implementation of products based on necessity.

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO Standing Committee on Performance Management and Standing Committee on Finance and Administration, AMPO, FHWA, NHI

### A.3 Approaches to New System Performance Measures

**Description:** Approaches to new system performance measures that will be meaningful to the public and

sensitive to investment and public policy changes; could be index or indices such as “Dow Jones” average. Mine much existing data at the state and national level.

**Goals:** Regional and corridor measures that can capture investment impacts, for variety of different goal areas and modes, e.g., freight, economic development, congestion, environment. Push “state-of-the-art” in this area.

**Desired products and outcomes:** Research report including key system transport indicators, perhaps including “report card”; possibilities for future performance measurement. This is likely a collection of research projects or program.

**Suggested roles (AASHTO, FHWA, TRB):** NAS, USDOT leading; BTS involvement

### A.4 Best Practices for Data Collection and Reporting for Performance Measures

**Description:** Identify data needs for specific performance measures; assess state ability to support these measures; how to get data, which data, which software; like a consumer report of new tools; possibilities of national architecture?

**Goals:** Raise standards for data collection and management among state DOTs; assure data are credible, timely, and useful for decisions.

**Desired products and outcomes:** Framework for a Data Business Plan for state DOTs

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO Standing Committee on Planning, NCHRP, FHWA involvement

## DEVELOPING A SET OF NATIONAL TRANSPORTATION PERFORMANCE MEASURES

### B.1 AASHTO Policy Statement on the Purpose of National Performance Measures

**Description:** Proactively develop a policy statement on national measures using an established committee. Consider using a two-day retreat of states as a part of the development process. Include other partners, congressional representatives, MPOs, other parties (not defining measures). Use NCHRP (58) as a starting point.

**Goals:** Define a clear vision and policy framework for national performance measures.

**Desired products and outcomes:** Product is a policy statement. Outcome is a clear communication of purpose.

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO

### B.2 Develop Scenarios for Carrying Out National Performance Measures

**Description:**

- Develop plans for three different scenarios of likely execution.

- Pre-legislation, influence how the legislation is shaped.
- Include in legislation mechanisms for doing activities post legislation.
- Do nothing and react to legislation.

### **B.3 AASHTO Decision on How this Program Will Be Carried Out**

#### **Description:**

- Consider the scenarios of how this will be carried out (proactive vs. reactive).
- Identify the people who need to be at the table to do the work.
- Determine resources needed and make them available.

**Goals:** Plan for the effort.

**Desired products and outcomes:** Decisions on resources and process

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO

### **B.4 Federal Program Framework**

#### **Description:**

- National priorities that get applied to state-specific situations
- Are they apportionment-related, incentive program, sanctions, flexibility
- Meeting goals – define cost and sources of money
- Recognizing state differences (span of control, influence of control over performance) (federal leverage/federal funding)
- Federal rule-making

**Goals:** Convert national goals into federal programs.

**Desired products and outcomes:**

- Federal program framework
- Outcome: feasible approach

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO in consultation with FHWA

### **B.5 Develop National Performance Measures**

#### **Description:**

- Build on existing studies: NCHRP 20-24 (58); NCHRP 20-74 & 74A.
- Build on existing AASHTO SCPM measures based on the six policy areas.
- Conduct the technical analysis necessary to develop the measures.
- Milestones-driven schedule and process for how this effort will be completed.
- Ensure that resources are available for conducting the analysis and build consensus.
- See next activity on outreach.

**Goals:** Develop a list of AASHTO-backed national performance measures.

**Desired products and outcomes:** Solid set of national performance measures to give to Congress

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO with TRB

### **B.6 Customer/Public Outreach and Engagement (coordinated with AASHTO PM development)**

#### **Description:**

- Conduct survey(s) on topics.
- Obtain validation on if we are on the right track.
- Seek priorities.
- Develop a message that is understandable to the public.

**Goals:** Get public engagement and input.

**Desired products and outcomes:** Set of public priorities

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO

### **B.7 Comparative Performance Measurement (NCHRP 20-24 (37 series))**

#### **Description:**

- Continue current effort.
- Package existing information for national PM purpose and use for dialogue.
- Align effort with six goal areas.
- Feed into the measure/development process.

**Goals:** Maximize value of existing effort.

**Desired products and outcomes:** Understanding of data and how it can be used

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO and TRB

### **B.8 AASHTO Center of Excellence for Performance Management**

**Description:** Create a technical resource and a hub of activities for performance-related activities.

**Goals:** Create a central resource base and coordination.

**Desired products and outcomes:**

- Create the center.
- Create an entity that can be the champion and enabler for the community.

**Suggested roles (AASHTO, FHWA, TRB):** AASHTO

## **PERFORMANCE MEASUREMENT APPROACHES FOR EMERGING TRANSPORTATION-RELATED POLICY DIRECTIONS AND ISSUES**

### **C.1 Performance Measures for Mega Regions and Corridors**

**Description:** Two-part research to examine the use of performance measures at the mega-region and at the corridor level involving multi-states and multi-modes. Synthesis of current state of the practice. More detailed study on challenges, barriers, and issues and how to address. Possible development of example performance measures and how to use.

**Goals:** Advance the state of the practice and art in the use of performance measures at the mega-region and corridor levels.

**Desired products and outcomes:**

- Synthesis
- Workshops on current practice
- Study report on how to do, examples of measures, etc.
- Workshops on how to develop, implement, and coordinate.

**Suggested roles (AASHTO, FHWA, TRB):**

- TRB synthesis
- TRB-funded study
- TRB, USDOT, AASHTO funding for workshops

**C.2 State-of-Practice with International and Private Sector**

**Description:** Identify current practices and importance to stakeholders, limitations, and successes. Identify major themes that lead to performance measures, including measuring and defining equity. Identify best practice applications for state DOT.

**Goals:** Incorporate best practices and develop toolbox for use by states.

**Desired products and outcomes:**

- Summary report
- Toolbox of practices

**Suggested roles (AASHTO, FHWA, TRB):** TRB

**C.3 Land Use and Transportation Strategies for Quality of Life**

**Description:** How to measure the impacts of transportation and land use strategies on quality of life and livable communities. Conduct research on accessibility, aesthetics, environmental impacts, public satisfaction, and other variables that are indicators of quality of life and develop ways to measure them. Link measures to coordinated transportation and land use approaches to determine the most promising approaches for enhancing quality of life.

**Goals:** Develop new understanding and knowledge of how transportation programs can be linked with land use strategies to enhance quality of life and livability.

**Desired products and outcomes:** Research reports

**Suggested roles (AASHTO, FHWA, TRB):** TRB NCHRP and TCRP projects

**C.4 Performance Measures for Multimodal Projects or Programs**

**Description:** Need to develop measures to take into account the myriad and often disparate elements of a multimodal project or program.

**Goals:** Using a diverse group of stakeholders, identify common and unrelated factors of multimodal projects that, taken as a whole, have value in characterizing and prioritizing projects for advancement. Explore synthesis of these measures and identify gaps or new ways to assess the macro-level impact of the combination of modal measures.

**Desired products and outcomes:**

- Tools or methodologies that provide a comprehensive measure of the value or performance of a multimodal project
- Narrative of the complexity of valuing multimodal projects, to be used as a communications tool for the public, elected officials, and private sector stakeholders

**Suggested roles (AASHTO, FHWA, TRB):** TRB and FHWA to provide existing measures; TRB and FHWA coordinate with AASHTO to develop recommendations

**C.5 Measuring and Managing Effects of Climate Change on DOTs and Transportation Industry**

**Description:** Through research and study, build on existing activity to develop guidance that will

- Identify and track (mega) trends affecting changes in climate and their effects.
- Analyze the potential impacts on transportation.
- Develop strategies to minimize and/or adapt.
- Create performance measures to manage desired outcomes for the future.

**Goals:** Assist DOTs and others to be more proactive to future change—be prepared, lead.

**Desired products and outcomes:** A more rational approach to new futures

**Suggested roles (AASHTO, FHWA, TRB):** Build on existing study by others; adapt for DOTs in the form of guidance developed under NCHRP.

**C.6 Performance Criteria for Effective Public-Private Partnerships**

**Description:** Conduct a forum and disseminate results with an option for follow-up research and a second forum and/or publications

**Goals:** Identify and disseminate principles, criteria, strategies, and outcomes for PPPs that have positive economic and system benefits for transportation agencies, the public, communities, and private investors or operators.

**Desired products and outcomes:**

- Phase 1 — A forum or roundtable including all key experts and parties and interested transportation agencies—with proceedings disseminated.
- Phase 2 (Optional) — Research product or forum to further synthesize principles and performance criteria for entering into PPPs.

**Suggested roles (AASHTO, FHWA, TRB):** Jointly sponsored forum. TRB support dissemination of results and optional Phase 2.

**C.7 Freight/Economic Development Performance Management and Planning**

**Description:** Develop analysis methods for determining/deriving economic impacts/value of freight and transportation investments and needs.

**Goals:** Capture economic value of investments in freight and other infrastructure (streetscapes, corridor improvements, capacity expansion, etc.); evaluate programming/investment decisions in budget decision making; identify opportunities for creative financing via value recapture; develop uniform evaluation processes for freight/economic development needs/benefits nationally; define freight/economic development planning roles and responsibilities of state DOTs.

**Desired products and outcomes:**

- Definition of common measures
- Inventory of data resources, data standards, data collection methods and measures
- Identification of key investment needs (national priorities) for freight and economic development

**Suggested roles (AASHTO, FHWA, TRB):**

TRB/NCHRP – frame research methodology, develop analysis tools and methods; AASHTO – convene roundtables/peer exchanges on data availability, collection, and quality; FHWA – support/assist national priorities and multi-state investment needs; support state DOT freight planning role and authorities.

**Suggested roles (AASHTO, FHWA, TRB):** TRB and AASHTO on ethics; TRB and AASHTO on cost/benefit of measurement; TRB, AASHTO, and FHWA (OMB?) on quantity of reporting; AASHTO and FHWA on national purpose and linkage to TIPs

### **C.8 Policy Implications of Performance Measurement/Management**

**Description:** Varied needs in assessing and refining performance measurement requirements and processes to achieve better results. Understand time/cost burden of reporting. Research optimal number of measures scaled to size or scope of individual DOTs. Identify low-cost/high-benefit strategies associated with each measure (also low-cost/high-benefit measuring tools?). Consider range of existing and possible future federal requirements to hold states accountable (for performance or for performance measurement?) — method, reporting, frequency, penalties. Explore ethics in reporting

**Goals:** Determine appropriate linkage of federal funding and performance goals. Inform and shape the scope of future Congressional/Federal reporting requirement. Link TIPs/STIPs to performance management. Federal justification and definition of purpose and use of specific measure; clarification in use of PMs for decision making. Develop ethics standards for reporting.

**Desired products and outcomes:** Establishment of national goals but retain state-level responsibility for target setting. Appropriate level of federal reporting requirements. Accurate, timely, and complete reporting. Reporting that is tied to a national purpose (cost-efficiency, transparency, goal achievement, etc.). Federal performance management goals in reporting to achieve results in project delivery and performance. Recall old management system initiative and move cautiously to fund based on mature measures (or, avoid funding tied to performance?). Or, tie funding to performance exclusively in new policy areas

# 2009 CEO Leadership Forum Participants

## State DOT Participants

Allen Biehler, Pennsylvania DOT  
Daniela Bremmer, Washington State DOT  
Mara Campbell, Missouri DOT  
David Ekern, Virginia DOT  
John Fuller, Oklahoma DOT  
Tim Gatz, Oklahoma DOT  
Diane Gusky, Tennessee DOT  
Paula Hammond, Washington DOT  
Leon Hank, Michigan DOT  
Timothy Henkel, Minnesota DOT  
Tim Horner, North Dakota DOT  
Caitlin Hughes Rayman, Maryland DOT  
Mark Larson, Minnesota DOT  
David Leingang, North Dakota DOT  
Jim Lynch, Montana DOT  
Mary Meyland, Texas DOT  
Jay Norvell, California DOT  
Pete Rahn, Missouri DOT  
Jill Reeder, Pennsylvania DOT  
Karina Ricks, Washington DC DOT  
Steven Simmons, Texas DOT  
Thomas Sorel, Minnesota DOT  
Kirk Steudle, Michigan DOT  
Lee Wilkinson, Iowa DOT  
Lynn Zanto, Montana DOT

## Forum Staff and Presenters

Gina Baas, Center for Transportation Studies, University of Minnesota  
Erik Cempel, Cambridge Systematics, Inc.  
Catherine Flannery, Continuing Professional Education, University of Minnesota  
Randall Halvorson, Cambridge Systematics, Inc.  
Robert Johns, Center for Transportation Studies, University of Minnesota  
Stephen Lockwood, Parsons Brinckerhoff  
Stephanie Malinoff, Center for Transportation Studies, University of Minnesota  
Lance Neumann, Cambridge Systematics, Inc.  
Sara Van Essendelft, Continuing Professional Education, University of Minnesota

## Participants from Sponsoring Organizations

King Gee, FHWA  
John Horsley, AASHTO  
Crawford Jencks, TRB  
Christine Johnson, FHWA  
Tony Kane, AASHTO  
Andrew Lemer, TRB  
Jeffrey Lindley, FHWA  
Jim March, FHWA  
Janet Oakley, AASHTO  
Jeffrey Paniati, FHWA  
Gloria Shepherd, FHWA  
Robert Skinner, TRB  
Joseph Toole, FHWA

## TRB Committee Member Participants

Hyun-A Park, Spy Pond Partners  
Katherine Turnbull, Texas A&M University

# White Paper Executive Summary

## State-Driven Performance-Based Management: State of the Practice

Cambridge Systematics, Inc.

The full white paper is available for  
download on the AASHTO Web site:  
<http://tinyurl.com/CEOLeadership>

## **Acknowledgments**

Randall Halvorson and Erik Cempel were the lead authors of the white paper. Contributors were Lance Neumann and Kelsey Ahern of Cambridge Systematics.

Many state officials contributed time and effort to the various case studies in other AASHTO and NCHRP research projects used as sources for this report, as well as to the 2009 CEO Leadership Forum survey and the Forum itself. We very much appreciated their help and thank them again.

We also thank AASHTO, the NCHRP panel members, and Robert Johns, director of the University of Minnesota's Center for Transportation Studies, who directed the project, for their advice and guidance.

## **Disclaimer**

The opinions and conclusions expressed or implied are those of the research agency that performed the research and are not necessarily those of the Transportation Research Board or its sponsors. The information contained in this document was taken directly from the submission of the author(s). This document is not a report of the Transportation Research Board or of the National Research Council.

# State-Driven Performance-Based Management: State of the Practice

## Introduction

This white paper serves as a catalyst for discussion at the DOT CEO Leadership Forum. In particular, it addresses three key areas:

1. The business process referred to as “Performance Management,” focusing on six basic components: goals and objectives, performance measures, targets, resource allocation, measuring and reporting results, and data quality;
2. The current state of the practice among state DOTs, with examples of performance-based decision making; and
3. The issues that need to be addressed in adopting a performance-based Federal-aid Program, focusing on six performance categories: preservation, freight/economic development, safety, congestion, system operations, and environment.

Several recent NCHRP projects have developed guiding principles for establishing performance measures and documented case-study examples of performance management systems implemented by DOTs and other transportation agencies. AASHTO’s Performance-Based Highway Program Task Force documented the current state of the practice of performance management. Further, a survey of performance management practices was distributed to state DOT CEOs; there were 23 respondents. This white paper builds on all of this material and implementation experience with a number of DOTs.

### Performance-Based Management In Practice

Performance management is a policy-directed, data-driven, performance-based business practice that links organization goals and objectives to resources and results. The outcomes of performance-based management include more efficient distribution of limited resources and a focus on accountability of decision making.

Over the last 15 years, there has been a dramatic increase among state departments of transportation (DOTs) in the use of performance management principles to plan, prioritize, track, and improve the effectiveness of nearly all DOT functions to achieve the agency’s fundamental goals. Performance information helps to guide decisions about

priorities and resource allocation, not just for capital project delivery but also for internal agency management and operations.

At one end of the spectrum are agencies that have limited data mining and reporting capabilities or practices beyond those needed to meet Federal requirements. At the other end are a handful of agencies with well-developed performance management programs that help drive every aspect of the organization including budgeting and project selection processes. In between are the rest of the state agencies with some level of predictive capability. These agencies have a commitment to using system and agency performance data to improve effectiveness and efficiency but with only some elements of a comprehensive performance management system in place. Progress and improvements in the performance management process are cyclical and occur incrementally over time, requiring sustained leadership over a number of years to achieve full implementation.

Despite institutional differences among agencies, several elements of best practice are frequently noted among the most advanced performance-based systems:

- The application of performance measures throughout the agency that are integrated vertically, horizontally, and among processes;
- The application of performance measurement in a systematic, documented way;
- Strong executive/managerial support and involvement in performance reviews and decisions on reallocating resources, in central and district offices, as well as among program and key business unit managers;
- Recognition that performance measurement can involve a culture change within the agency, with steps taken to focus on the positive aspects of this change while mitigating the potentially negative aspects;
- Transparency of performance results and their implications for transportation customers and stakeholders, as well as the owning/operating agency; and
- Several agencies link organizational performance and transportation system performance. This concept has existed for some time in the private sector, but now is being considered by public sector DOTs.

A “performance management framework” has been developed to illustrate the basic performance management principles that can be integrated into all of the critical functions and operations of a transportation agency (Figure ES.1). Actually using performance to drive resource allocation (the fourth box in the framework), such as budgeting or project prioritization, is the linchpin of actual performance management. Table ES.1 shows examples of state DOTs that allocate resources based on performance. It should be noted that in addition to identifying states with transportation system performance measures, the table also identifies states, such as Ohio and Virginia, that have organization measures for staff accountability.



**Figure ES.1 Performance Management Framework**

### Issues and Challenges

Several high-level issues and challenges have emerged from performance management research and case studies:

- The degree to which state DOTs have influence over what is being measured relative to external factors;
- Funding availability;
- Data collection resources;
- Integration with, and influence of, external processes, legislative requirements, and other external elements;
- Deciding the “level” for targets, to make sure they’re not too easy or impossible to reach, as well as short-term versus long-term targets, and what to do if the targets are met or not met;
- The degree to which targets are made public; and

- Consistency in reporting between regions and, at the national level, between states.

A national performance management system provides several challenges at the state level:

- National goals that are relevant to each state;
- Performance measures and targets that are relevant to each state;
- The ability in terms of resources and funding of each DOT to develop data management systems to support performance-based decisions; and
- The level to which state and Federal government is accountable, and the way in which funding is tied to performance and targets.

### Conclusion and Future Directions

The trend towards states adopting performance management has been the result of several factors, including the demand for more accountability from government programs and agencies, the pressure of scarce financial resources, and the recognition of best business practice. These factors will largely shape the upcoming authorization discussions in Congress.

WSDOT has recognized the following key lessons over its long process of developing a performance-based management system:

- **Keep perspective.** Performance measurement is one of several decision-making tools.
- **Timing is everything.** Don’t delay until you have the perfect data, framework, or IT system.
- **Lead, don’t follow.** Tell your story before someone else tells it for you.
- **Don’t tolerate silos.** Strive for a “One DOT” mentality.

In general, survey respondents and participants at the 2009 CEO Leadership Forum agreed with these conclusions. In particular, in terms of timing, it is important to get started with available tools and measures and refine them over time. State DOTs feel that any national performance management system should focus on areas of existing expertise, especially safety and preservation; other areas, particularly environment, freight, and economic development, need more research and development. Increased sharing of best

**Table ES.1 Resource Allocation Examples from Select Agencies**

Agency	Examples of “Action” Based on Performance
Arizona DOT	Prioritization of capacity-expanding projects outside of urban areas
California DOT	Allocation of resources for State Highway Operations and Protection Program
Florida DOT	Prioritization of program funding levels
Michigan DOT	Defining relative priorities among programs Determining preferred work strategies (e.g., maintenance vs. rehab vs. reconstruction) within programs Allocation of resources to regions
Minnesota DOT	Capital budgeting decisions at the district level Funding allocation across districts Adjust types of investment in program
Montana DOT	Capital funding allocations to districts, systems, and work types, and project programming consistency
Ohio DOT	Assessment of staff performance Allocation of funding across districts “Face-to-face” meetings to develop action plans to address performance deficiencies
Pennsylvania DOT	Identification of actions in district and bureau annual business plans to improve performance Quarterly “face-to-face” meetings between district engineers and Deputy Secretary for Highway Administration to review performance and identify actions to meet targets Similar face-to-face meetings between Bureaus and Deputy Secretaries
Virginia DOT	Staff accountability Monthly video conference with Commissioner to review project status for major projects (based on “Dashboard”)
Washington DOT	Quarterly meeting to review performance with 25 to 30 senior staff. Project prioritization Funding allocation across districts

Source: NCHRP Report 8-36(47)

practices and training will be required for states to reach the levels of performance management likely to be required by any national performance-based system.

In the Congressional Authorization discussions, it will be important to recognize that even though performance

management is recognized as a best business practice, it alone will not guarantee that a desired or acceptable level of performance will be achieved. Most importantly, total funding available for transportation will limit the performance that is possible to achieve even with a comprehensive performance process in place. As AASHTO has stated, “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. Performance management involves balancing performance with resources and making tradeoffs to reflect local priorities. Achieving the best level of performance depends on several factors:

- Consistency in, and understanding of, goals, objectives, performance measures, and targets;
- High-quality data to support performance management decisions;
- The ability of managers, and the availability of analytic tools, to identify performance impacts of projects realistically and efficiently; and
- The ability to use performance information to inform as well as manage expectations among the political leadership, stakeholders, and the public.

Successful implementation will continue to result in:

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

**Writer:** Laurie Gustafson  
**Photographers:** Matt Miranda, Cadie  
Wright Adhikary, Pamela Snopl  
**Editor:** Pamela Snopl  
**Designer:** Cadie Wright Adhikary,  
Adam Babel

---

UNIVERSITY OF MINNESOTA



**CENTER FOR TRANSPORTATION STUDIES**

Center for Transportation Studies  
200 Safety and Transportation Building  
511 Washington Ave S.E.  
Minneapolis, MN 55421

Phone: 612-626-1077  
Fax: 612-625-7331  
E-mail: [cts@umn.edu](mailto:cts@umn.edu)  
Web: [www.cts.umn.edu](http://www.cts.umn.edu)

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. This publication is available in alternative formats upon request.