TRB Performance Measurement Committee ABC30

CheckPoint

TRB PERFORMANCE MEASUREMENT COMMITTEE NEWSLETTER

Volume VI, Issue 2

DECEMBER 2007

MESSAGE FROM THE CHAIR

— BY LANCE NEUMANN lneumann@camsys.com - CAMBRIDGE SYSTEMATICS

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The Performance Measurement Committee has had another active and successful year thanks to the hard work of our committee members and friends. The Third International Conference was held in September in Irvine, CA and was a great success. A number of committee members participated on the planning committee and many others contributed to, and attended, the conference. The papers and presentations from the conference are available on the TRB website and a conference proceedings document, including a summary of breakout session discussions, is being prepared. The participation of international colleagues added a significant new and valuable element to the meeting and reinforced the need to continue our international outreach activities. The Japanese Society of Civil Engineers has expressed an interest in continuing to work with the Committee and co-sponsor joint activities. Partly as a result of the visibility of the conference and the call for white papers at the conference, our Committee received significantly more papers to review for the Annual Meeting. Annual Meeting sessions sponsored or co-sponsored by the Committee, including a number of workshops, are listed elsewhere in this newsletter.

Reflecting the continued attention that performance measurement is receiving in the public sector, a new Executive Order on improving government program performance was issued in November directing all federal agencies to take further steps in performance measurement and reporting. The report of the National Surface Transportation Policy and Revenue Study Commission (authorized under SAFETEA-LU) is due to be released in December and is expected to provide recommendations related to the performance of Federal-aid programs and steps that might be taken to improve accountability. In addition, AASHTO has established a task force on performance measures to provide information to the Commission and Congress on steps that states have taken to develop and strengthen performance management programs. Pete Rahn, the Director of Missouri DOT and the new AASHTO president, has made performance measurement one of his emphasis areas for 2008.

Finally, I would be remiss if I did not acknowledge and thank Sandy Straehl and Mike Tierney from the Montana Department of Transportation for all of their hard work in creating this newsletter and producing all of the editions from the inception of the Committee until now. This edition is the first one that is being produced by our new team led by Connie Yew of FHWA and Joe Zietsman of TTI. I appreciate Connie and Joe stepping into this role and I'm sure they will continue the track record of excellence established by Sandy and Mike.

PMC Newsletter Information

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All article submissions should be made in word - formatted e-documents, 500 words or less and electronically sent to: (connie.yew@dot.gov)

Disclaimer:

The PMC Newsletter is sponsored by contributors submitting Performance Measurement related articles to the editor and do not reflect the views of the Performance Measurement Committee

Performance Measurement Committee (ABC30)
Annual Meeting
Tuesday, January 15, 2008
Hilton – Caucus Room

1:30 – 1:40	Introductions
1:40 – 2:00	Chair's Report
	Activities during year
	Membership rotation
	4th Conference
	TRB Staff Report
2:00 – 3:00	Subcommittee Reports
	Paper reviews
	Communication
	Research
	International Activities
3:00 – 4:00	Presentations/Updates
	Update on Atlanta MAP report
	AASHTO SCOQ
	Workshop summary
	Updates from others
4:00 – 5:00	Future Committee Activities/Sessions
	Mid Year 2008
	2009 Annual
	Future research topics

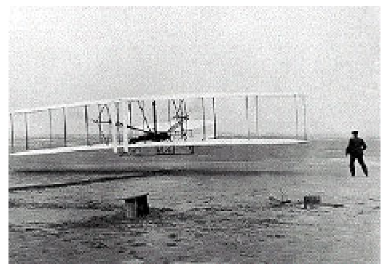
MEETING ANNOUNCEMENT AND CALL FOR PRESENTERS:

THE "WRIGHT" WAY TO PERFORMANCE

Raleigh, North Carolina

APRIL 14-17, 2008

The AASHTO Standing Committee on Quality (SCoQ) annual meeting will be held in Raleigh, NC, April 14-17, 2008. The SCoQ includes subcommittees on Performance Measurement, Partnering, Project Delivery, and Awards. The committee invites you to join us to learn or share successful practices and current research in these areas. There are still some openings for either 45 or 90 minute presentations.



Please contact Walt Thompson, NCDOT, 919-807-0610 at:

wthompson@dot.state.nc.us or go to http://quality.transportation.org

COMPARATIVE MEASURES DRIVE FOR PAVEMENT SMOOTHNESS

Sometimes you don't need a welcome sign to tell you you've just crossed a state line. You notice the difference in the ride quality. Hopefully that won't be the case in the future. Thanks to the success of the comparative measures study for project delivery coordinated by the AASHTO Standing Committee on Quality, 33 states have agreed to share data to see who has the smoothest Interstate pavement and most importantly why. State data will be compared using IRI pavement roughness measures. Once the data are adjusted and segmented for a valid comparison, the top five states will be further studied for information on pavement construction and maintenance practices. Conclusions drawn from the study will be shared as success stories. A final report is scheduled for March 2008. Both comparative measures studies have been funded through the National Cooperative Highway Research Program.

For more information, contact Mara Campbell, MoDOT, at 573-526-2908.

FLORIDA'S STATEWIDE OPERATIONS PERFORMANCE MEASURES AND DATA COLLECTION

— BY ELIZABETH BIRRIEL, P.E. Elizabeth.Birriel@dot.state.fl.us — FDOT

In order to better accommodate the state's rapid growth in population, tourism, and commerce, the Florida Department of Transportation (FDOT) is committed to implementing statewide, fully integrated Intelligent Transportation Systems (ITS) in a cost-efficient manner. ITS represents the use of real-time information systems and advanced technologies as transportation management tools to improve the movement of people, goods, and services. The net result is the application of technology to resolve mobility and safety problems, rather than sole reliance on building new roads and expanding existing ones.

As ITS is evolving in Florida, the development and reporting of operations performance measures is a high priority for FDOT in order to demonstrate and document the benefits of ITS. The FDOT Operations Performance Measures Program includes measures of basic production and usage (or *output*), as well as measures of performance and resulting benefits (or *outcome*), as summarized in Table 1.

# # # # #

"ITS represents the use of real-time information systems and advanced technologies as transportation management tools to improve the movement of people, goods, and services."

Table 1. Summary of FDOT ITS Performance Measures

Type of Measure	ITS Performance Measure	Definition
Output	Total Annual 511 Calls	Total number of 511 calls received annually for traveler information.
	Total Annual Road Ranger Stops	Total number of stops made annually by Road Ranger vehicles to provide roadside assistance, debris removal, and traffic control assistance during incidents.
	Miles Managed by ITS	Total number of limited-access Florida Intrastate Highway System (FIHS) miles covered/managed by ITS equipment.
Outcome	Incident Duration	The time between when an incident occurs and when traffic returns to normal flow.
	Travel Time Reliability	How travel time varies over time.
	Customer Satisfaction	Percent of customers satisfied with ITS services including Dynamic Message Signs (DMS) usage and performance, Road Ranger performance, and traveler information web site usage and performance.

FLORIDA'S STATEWIDE OPERATIONS CONTINUED ...

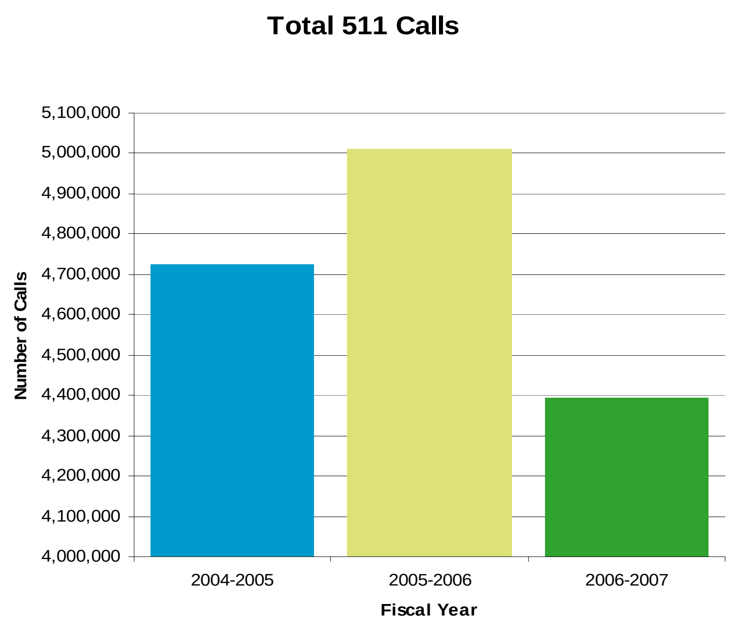
PERFORMANCE MEASURES RESULTS

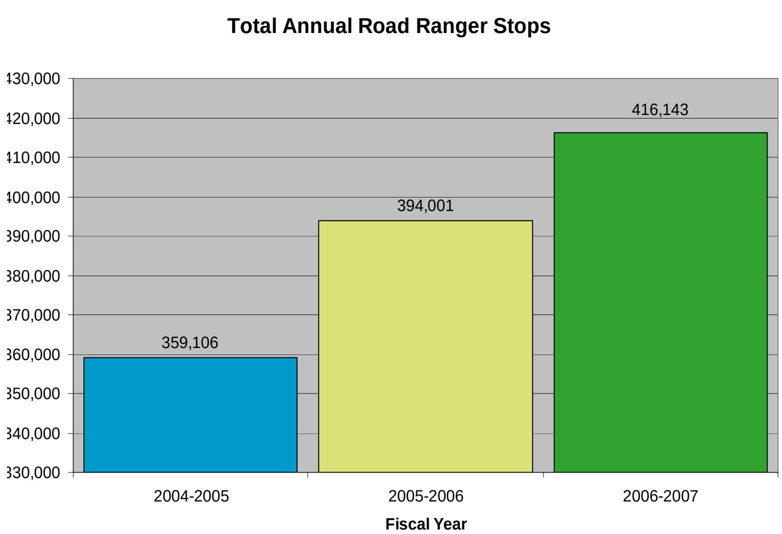
Performance measure results are reported on a fiscal year basis, July 1 through June 30.

511 Calls

A total of 4.4 million 511 calls were made from July 2006 through June 2007. It should be noted that total statewide calls were lower compared to previous years, primarily due to significantly less hurricane activity during the 2006 season.

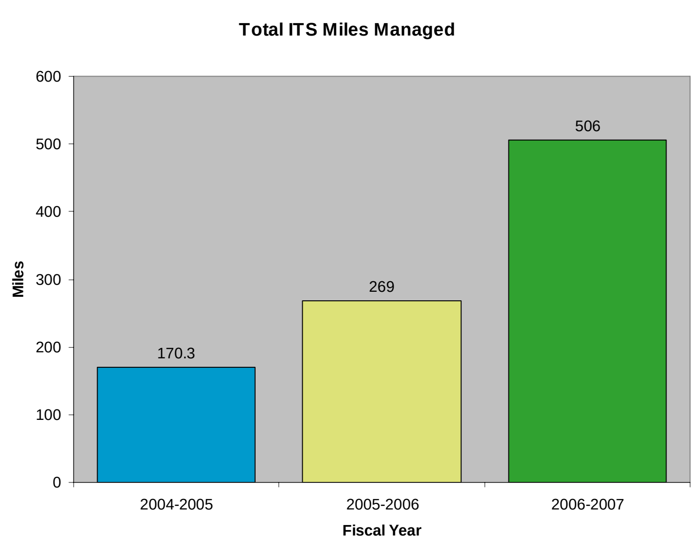
Significant improvements underway to improve 511 in Florida include interactive voice response, trip planning applications, expanded data gathering capabilities, and website enhancements.





Road Ranger Stops

There were 416,143 Road Ranger stops made along 1,110 miles of coverage statewide, an increase of 5.6 percent compared to the previous year.



Miles Managed by ITS

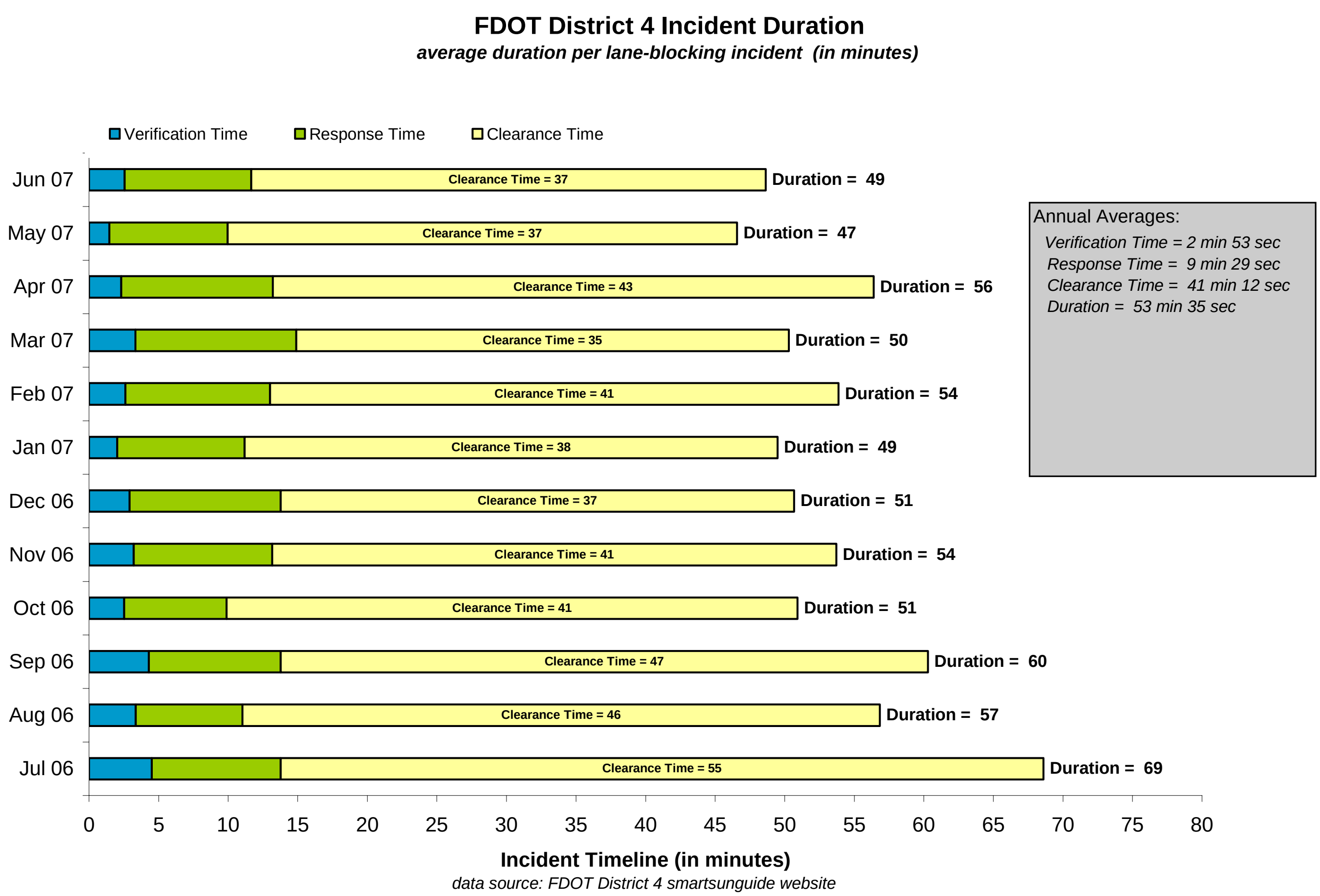
As of June 2007, 506 miles of limited-access FIHS facilities are managed by ITS. This is 23.8% of total system mileage. Extensive ITS deployment will be taking place across Florida during the next year.

FLORIDA'S STATEWIDE OPERATIONS CONTINUED ...

Incident Duration

One of the major activities completed in 2007 was the development of an incident timeline including incident verification, response and clearance times, as well as modification of the SunGuide statewide TMC software to consistently record and report incident duration data.

FDOT District 4 in Fort Lauderdale was able to report on incident duration for the entire 2007 fiscal year, as shown below. Average incident duration was 53 minutes and 53 seconds for each lane-blocking incident. It is anticipated that incident duration will be reported by six of the eight FDOT Districts in 2008.



FLORIDA'S STATEWIDE OPERATIONS CONTINUED ...

Travel Time Reliability

Travel time reliability includes two metrics – the buffer time index and on-time arrival measure. Data requirements for reporting reliability have been identified, and work is underway to modify the SunGuide TMC software to include data collection and reporting on travel time reliability. It is anticipated that travel time reliability measures will be reported by six of the eight FDOT Districts in 2008.

Customer Satisfaction

In 2006, FDOT conducted a statewide customer satisfaction survey to determine public attitudes toward ITS services provided by the state. Key findings are summarized in Table 2. Similar surveys will be conducted once every two years.

Table 2. ITS Customer Satisfaction Survey Results

511 Service
• 22% of drivers know about 511, and about half of them have actually used the service. • 86% of 511 users are likely to change their route based on information provided. • 30% of 511 users call ahead to plan their trip, and 64% call after running into traffic problems.
Dynamic Message Signs (DMS)
• 94% of drivers read DMS, and most read them frequently. • 83% of drivers who read DMS are likely to change their routes based on posted information. • 33% of drivers have used information posted on a DMS during a hurricane evacuation.
Road Ranger Service
• 99% of drivers assisted by a Road Ranger unit report that the driver was helpful.

SUMMARY

FDOT continues to improve the data collection, analysis and reporting related to operations performance measures, and it is anticipated that results for all six measures will be published in summer of 2008.

# # # # #

For more information on FDOT's ITS Performance Measures Program, please contact

Elizabeth Birriel, Deputy State Traffic Operations Engineer, Florida Department of Transportation,

(850) 410-5606, Elizabeth.Birriel@dot.state.fl.us.

MISSOURI DOT PUSHING PERFORMANCE WITHOUT TARGETS

— JIM DICKSON James.Dickson@modot.mo.gov — MODOT

MoDOT's approach to performance measurement looks similar to many other organizations. There are key linkages to its mission, values and strategies. All 100 measures connect to one of MoDOT's 18 Tangible Results. Quarterly review meetings keep managers accountable for improving performance. And organizational measures cascade down to work unit and individual performance plans. But one thing that you'll never see is a target on any of its performance measures.

MoDOT's aversion to performance targets stem from four basic tenets:

1. Performance targets can limit your results. Once employees reach or near a target performance often falls off.
2. Performance targets are time consuming to set. Determining just the right target to challenge yet not discourage employees takes time and often repeated adjustments.
3. Performance targets can compete with each other. Targets result in managers competing for resources with little regard for the overall organizational effect.
4. Performance targets can actually conflict. Worse still, targets can sometimes be in direct conflict with each other. For instance, efforts to meet a target on costs might directly conflict with a safety target.

Rather than targets, MoDOT has encouraged managers to find best of class benchmarks from inside and outside the transportation industry. This approach keeps MoDOT employees focusing on innovative strategies rather than incremental steps toward improving performance. This approach also helped drive MoDOT's recent selection as a Missouri Quality Award winner.

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For more information, contact Mara Campbell at 573-526-2908. You can read more about MoDOT's full business approach in its Missouri Quality Award application at http://www.modot.org/mqa/.

Pete Rahn—New AASHTO President

Pete Rahn, the Director of the Missouri Department of Transportation was elected on October 2, 2007 as the President of the American Association of State Highway and Transportation Officials (AASHTO).

Rahn outlined three emphasis areas for AASHTO in the coming year and in accepting the position he said, "AASHTO member states must embrace new strategies that demand accountability and performance measurement."

Among the actions Rahn will have AASHTO work on to meet this emphasis area is to transform AASHTO's existing Standing Committee on Quality to a Standing Committee on Performance Management.

Excerpt from AASHTO Press Release

December 19, 2007

HIGHWAY SAFETY — PERFORMANCE MEASUREMENT IS CRUCIAL

CREATING PROGRAMS THAT ARE STRATEGIC, POLICY-DRIVEN, AND SUPPORTED BY DATA AND ECONOMIC ANALYSIS

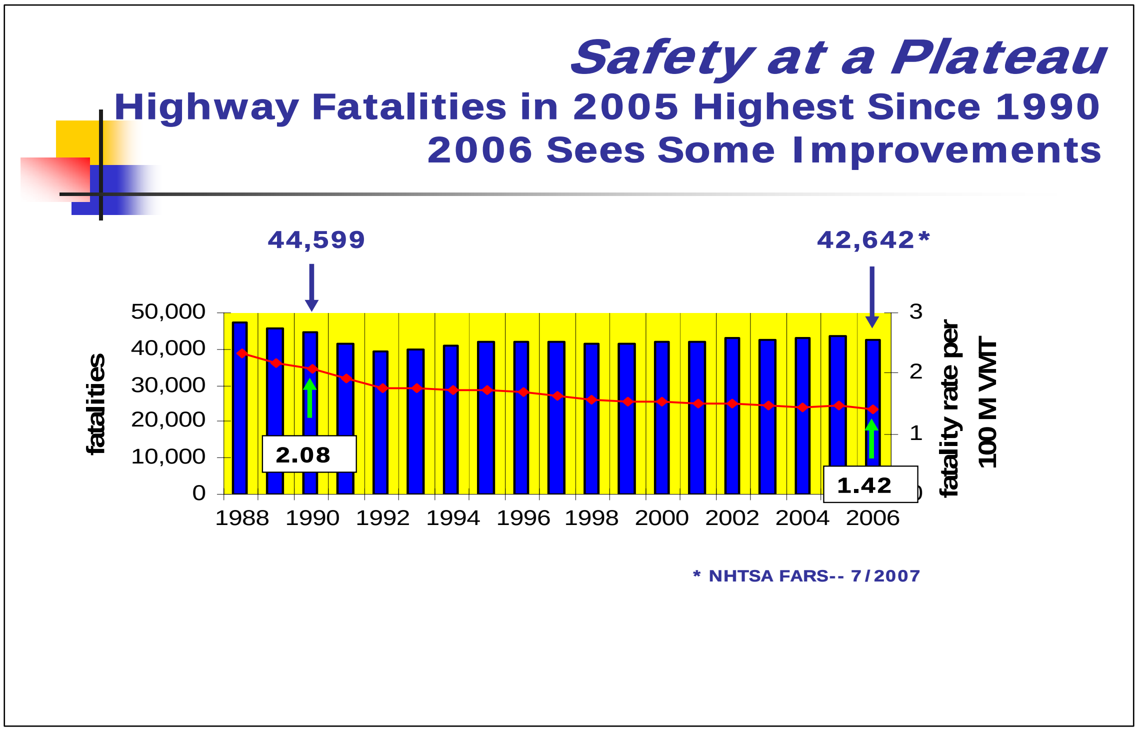
— BY MICHAEL HALLADAY Michael.Halladay@dot.gov — FHWA

U.S. Department of Transportation
Federal Highway Administration

Within State and local highway organizations, highway safety has always been of paramount importance. Most Departments of Transportation, certainly including the United States DOT, place safety at the top in terms of priorities for their organization – reflecting the belief that protecting the public from death or serious injury while using the highway network is their first and foremost responsibility.

To translate this priority into strategies to reduce fatalities and serious injuries – at policy, program, and project levels – which decision-makers can act upon to direct budget streams and policy changes, is challenging. This is not obvious at first; because at the top level, it would appear that highway safety has the distinct advantage of having very obvious performance measures: i.e., how many deaths and serious injuries are occurring? The challenge comes in more directly linking strategies to safety benefits – and central to doing this is recognition that highway deaths and serious injuries are <u>*not*</u> an inevitable outcome of our Nation's mobility – they are in fact the result of causal factors which can be prevented or mitigated through effective strategies.

The highway safety community has been steadily improving the ability to apply scientifically-based performance analysis to strategy development – and resulting safety improvements from vehicle, roadway, and driver-based programs since the 1960's have been impressive. Since the early-to-mid-1990's, however, continuing the level of improvement has been difficult; see chart:



HIGHWAY SAFETY CONTINUED . . .

Safety Information Systems

High-quality data systems are essential elements to building a strong performance-driven safety program. It is important that States, local road agencies, and metropolitan planning organizations identify their critical safety needs, so that they can make strategic investment and program decisions to achieve significant reductions in traffic fatalities and injuries. A well-developed system is capable of integrating data from different sources to create a full picture of relevant highway safety elements; including data on the crash itself, roadway features, driver information, vehicle type, and even medical and legal outcomes.

State Safety Information Systems – A Critical Need

- **Data Systems**
  - **Complete**
  - **Accessible**
  - **Timely**
  - **Accurate**
  - **Compatible**
  - **Integrated**
- **Information Analysis Capability**
  - **Identify Problems**
  - **Develop Effective Countermeasures**
  - **Evaluate Safety Benefits Over Time – "Saving Lives"**

Partnering for Success

To fully achieve safety objectives, transportation agencies must cross organizational boundaries and bring together diverse safety stakeholders, including motor carrier safety organizations, motor vehicle administration agencies, police and fire personnel, and regional and metropolitan transportation planning organizations, to work as partners in reducing the deaths, injuries, and economic impacts resulting from motor vehicle crashes. States are advancing comprehensive approaches to highway safety as part of Strategic Highway Safety Plans, which are required of State DOTs as part of Highway Safety Improvement Program (HSIP) funding. Highway safety information needs also should be included in a State's asset management program along with pavements, bridges, operations, and maintenance, etc., to help ensure optimal usage of limited available funding; and within the FHWA the Office of Safety has partnered with the Office of Asset Management to produce a short brochure on 'Safety and Asset Management' which communicates the importance of including addressing highway safety as part of a fully comprehensive program. (Contact David Smith for more info: David.M.Smith@dot.gov)

> ***"To fully achieve safety objectives, transportation agencies must cross organizational boundaries and bring together diverse safety stakeholders, including motor carrier safety organizations, motor vehicle administration agencies, police, fire personnel. . ."***

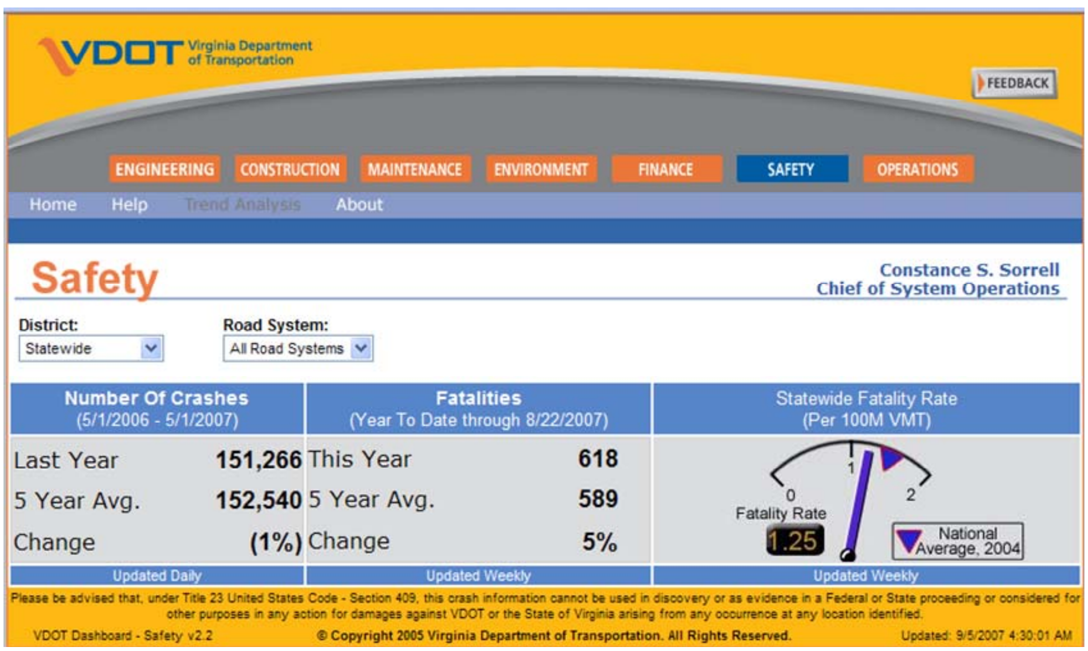
HIGHWAY SAFETY CONTINUED . . .

Finally, not to be discounted at all is the capability that strong information systems provide in communicating with the public – and open availability of highway safety performance information is no exception. Public awareness of the highway safety challenge is very important to achieving support for implementing a comprehensive set of countermeasure strategies, and State DOTs are including safety metrics, as with this example from Virginia DOT:

"Public awareness of the highway safety challenge is very important to achieving support for implementing a comprehensive set of countermeasure strategies. . ."

Communication / Accountability

Example is Virginia DOT 'Dashboard': http://dashboard.virginiadot.org/



I hope this brief discussion of the importance of data and performance measures to advancing highway safety has been interesting to you, and we encourage everyone engaged in the highway transportation enterprise to remember that death and serious injury on highways is a public health crisis in America; and that they can be prevented with a comprehensive, data-driven approach.

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IMPROVING INTERNAL OPERATIONS WITH PERFORMANCE MEASURES

— BY JEFF PRICE, Jeff.Price@VDOT.Virginia.gov — VADOT

"It's the little things that make a difference." Can you think of an example from your organization where that was true? I think of the process we use at VDOT to assess maintenance needs for the upcoming biennium and the many small changes we made in the process this year that enabled us to complete in four months and 3,000 man hours what in the past has taken six months and 7,000 man hours to do.

What were the little things we did and what difference did they make? We reviewed the business rules underlying the repair decision models and found several irrelevant or inconsistent rules. Cleaning up the rules made the models run much faster. We experimented with neural nets as a way to validate results coming out of the repair models. That enabled us to check tens of thousands of data records in less than a second; something that previously would have required hours of manually scanning the relevant data in each record. We developed a database template for all the "needs" information we generate from various sources which enabled us to query, compile, manipulate and report the data much easier and faster than before.

The needs assessment is part of program planning which I define as an internal operation, similar to contract development, equipment management, property management, procurement, accounting, and human resources to name a few. The man hours required to complete the needs assessment is one measure of how efficient we are in completing that task. Another would be the total time or cost to complete the task.

Monitoring resource use, output production, unit cost and productive efficiency are fundamental to managing a business, but it is important to keep in perspective how each operation contributes to and supports higher order measures and outcomes. For example, performing adequate staff training and preventative maintenance on vehicles contributes to shorter incident clearance times; which in turn contribute to less non-recurring delay and better travel time reliability. Reducing non-recurring delay lowers the cost of transportation and increases the contribution of transportation to economic growth.

Performance management involves a hierarchy of performance measures that begins with the individual employee and rolls up through the chain of command through the agency as shown in Figure 1. There is a story about a journalist doing an article on NASA many years ago who asked a man sweeping one of the hallways what his job was. The man replied "I'm helping to put a man on the moon." It's that sense of connectedness and purpose that we strive to achieve throughout the organization.

Developing the entire hierarchy of performance measures and building explicit linkages in data and measures from one level to the next higher level is quite difficult (I can't say we have achieved this), but at VDOT, simply working on the process has raised awareness as well as questions about how everything we do contributes to higher level goals. In some cases we find things that don't have significant impact on higher goals, and we look for ways to eliminate or minimize them. In other cases we find things that we didn't realize were so important and we begin paying more attention to them.

In my current role as business architect, data steward and coordinator for all systems development for maintenance and operations, and lead for the statewide needs assessment, I see many opportunities to improve internal operations through improved data management and systems integration.

Business architecture is the framework that links strategic goals, business processes, organizational roles and responsibilities, systems, data, and technology together. Our current work in this area includes:

- Developing a Concept of Operations and Concept of Maintenance that link to and support the agency vision and business plan, and
- Developing a three-year Data Business Plan that will serve as the roadmap against which all requests for technology or system development (new systems or enhancements to existing systems) will be evaluated

Our model for future systems development is based on Service Oriented Architecture (SOA), which will enable us to build data storage and services incrementally as requirements for each business function are finalized, rather than waiting to begin database or software development until requirements for all functions are complete. It will also enable data and business functions to be more explicitly tied and managed by responsible units within the agency. We believe the Data Business Plan and the SOA approach we are adopting will expand data integration tremendously, eliminate many redundant and sometimes contradictory data services, improve data quality, and have significant impact on internal operations in the future.

How will we know? Milestones and deliverables of internal operations such as the biennial needs assessment for maintenance and operations will continue to be tracked for timeliness, unit costs, and productive use of resources.

# # # # #

IMPROVING INTERNAL OPERATIONS CONTINUED ...

Figure 1. Hierarchy of Performance Measures

Impact To:	Type: (examples)	Measure (examples)	Key Factors: (examples)
All of Society	Core Indicator	Trans. Contribution to GDP, Jobs creation, National Security	User cost of trans., Travel Time, Reliability, Crashes, Throughput
Road Users	Program Outcome	Excess user cost of trans. Travel Time, Reliability, Crashes, Throughput	Remaining service life by asset, Incident response time, Project/Program Return on Investment
Agency	Program Output	Remaining service life by asset, Incident response time, Project/Program Return on Investment	On-time, On-budget project delivery, Planned vs Actual units of work
Org Unit	Unit Output	On-time, On-budget project delivery, Planned vs Actual units of work	Quantity and cost of work units, Quality of data, analysis & mgt decisions
Employee	Employee Output	Quantity, timeliness, & quality of work, Innovative contrib.	Training, competency, mgt & direction, opportunities provided

NEW MEASURES TRACKING METROPOLITAN ATLANTA TRANSPORTATION SYSTEM PERFORMANCE

— BY VALENTIN VULOV @vvulov@grta.org — GRTA

The Transportation MAP (Metropolitan Atlanta Performance) Report is an annual performance measurement report that sets measures and targets for tracking the overall performance of the region's transportation system. The report, created in 2003, is updated annually by the Georgia Regional Transportation Authority.

Each year a committee consisting of representatives of the regional transportation agencies reviews the updated measures and targets. Selected recommendations are then incorporated into the next edition of the report. For example, the previous edition of the report introduced the travel time index as a measure of average congestion on the Atlanta freeways. For this measure, data was generated using Georgia Department of Transportation's NaviGAtor video detection cameras. However, the traveling public, businesses, and policy makers nowadays demand knowing the travel time variability they may experience when making their trips. Responding to this need and building on the NaviGAtor data source, two travel time reliability measures—the planning time index (PTI) and the buffer time index (BTI)—were developed and included in the 2007 report.

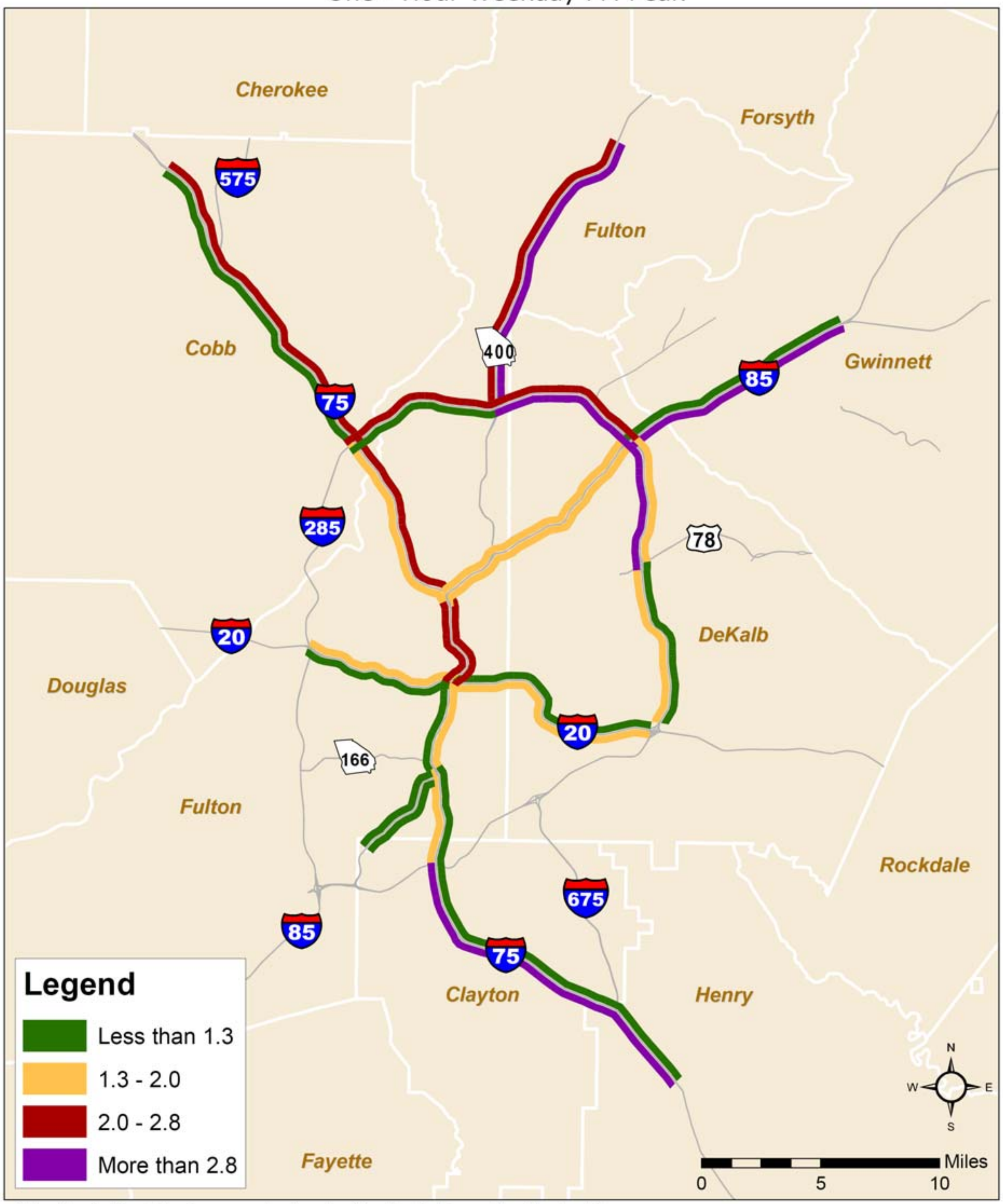
Travel time reliability can be defined as how much trip travel times vary over the course of time. PTI is defined as the ratio of the 95th percentile travel time, also known as planning time, over the free-flow travel time. PTI illustrates how much more time a traveler should allow under congested conditions, compared to free-flow conditions, to ensure on-time arrival 95 percent of the time. The PTI by freeway corridor for the afternoon Atlanta peak hour in 2006 is depicted below.

"For more information, contact Valentin Vulov, AICP, Senior Project Manager, at 404-463-2434.

NEW MEASURES TRACKING CONTINUED ...

2006 Planning Time Index

One - Hour Weekday PM Peak

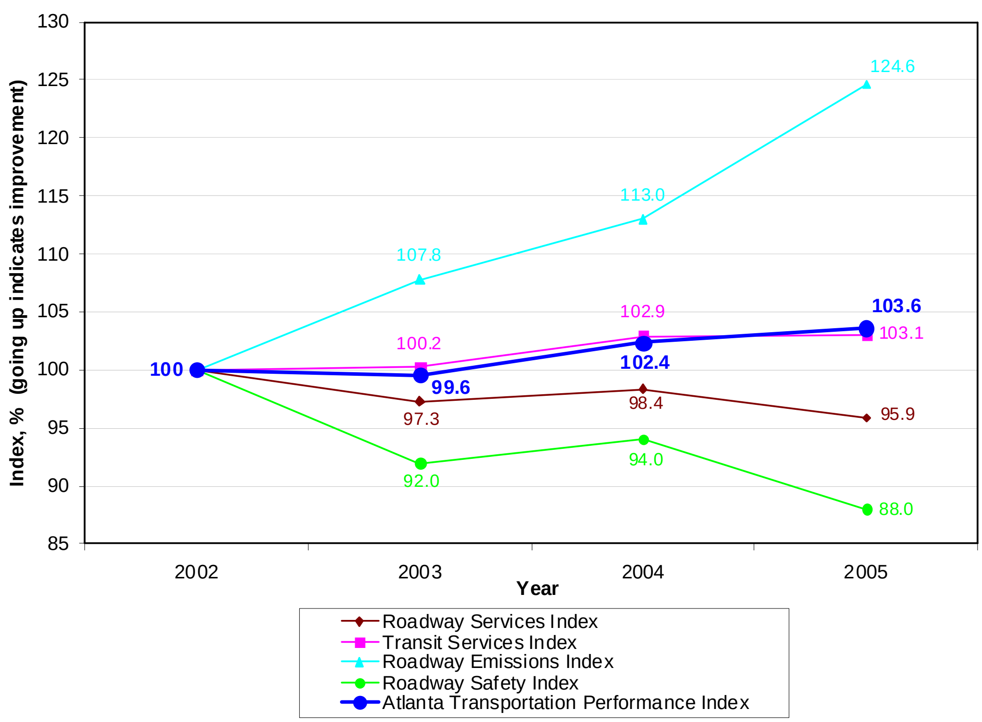


Note: Planning Time Index is expressed as the ratio of the planning time and free-flow travel time.
Planning time represents the amount of time needed to be on-time 95 percent of the time.
The Planning Time Index for GA 400 is based on 2004 data.

NEW MEASURES TRACKING CONTINUED ...

BTI is defined as the size of the buffer time expressed as a percentage of the average travel time (buffer time is the difference between the planning time and the average travel time). BTI tells a traveler what the extra time is, as a percentage of the average travel time necessary for a trip, so that this traveler arrives on-time 95 percent of the time.

The third new measure—the Atlanta Transportation Performance Index—synthesizes a number of factors reflecting roadway, transit, safety and air quality performance. This composite index is a single measure that tracks the state of the Atlanta transportation system, similarly to the way the temperature is the main weather-related measure. The composite transportation performance index can be viewed as consisting of four basic indices—roadway services index, roadway safety index, roadway emissions index, and transit services index—tracking separately important transportation system performance characteristics. These indices are shown below.



The transportation performance indices allow explicitly establishing, evaluating, and incorporating priorities in the planning process.

For more information, contact Valentin Vulov, AICP, Senior Project Manager, at 404-463-2434.

To view the 2007 Transportation MAP Report online, visit http://grta.org/news_section/2007_publications/2007_Trasnsportation_Map_Report.pdf

The PTI and BTI by freeway corridor (the Appendix to the 2007 report) can be accessed at http://grta.org/news_section/2007_publications/2007_Transportation_Map_Report_Appendix.pdf

# # # # #

Maryland Department of Transportation

THE MARYLAND PERFORMANCE ASSESSMENT AND COLLECTION TOOL "M-PACT"

— RON SPALDING, rspalding@mdot.state.md.us — MDOT

The Maryland Department of Transportation (MDOT) has been required by state law to annually submit two performance reports: Managing For Results (MFR) and the Annual Attainment Report on Transportation System Performance (AR). The MFR is a statewide strategic planning approach to management that incorporates program-level performance measures. It is a budget-driven process whose main objective is to provide information to improve the financial management of public funds and is required of all state agencies. The Department of Budget and Management (DBM) uses the MFR in reviewing state agencies performance as input into the annual budgetary process. The AR is currently MDOT's highest profile performance measurement report and evaluates MDOT's progress towards its long-range transportation plan (Maryland Transportation Plan) and the implementation of its six-year capital budget for transportation projects (Consolidated Transportation Program). The AR also sets long-term and intermediate-term performance targets. In addition, the AR includes important discussions about the impact of induced travel and transportation demand management (TDM) programs. The MFR and AR link agency goals and objectives to performance measures and strategies to help guide agency management decisions.

On an annual basis, MDOT collects performance information from the state's five modal agencies and toll authority (Maryland Aviation Administration, Maryland Port Administration, Maryland Transit Administration, Motor Vehicle Administration, State Highway Administration and the Maryland Transportation Authority) to produce the MFR and AR.

In 2007, MDOT produced the Maryland Performance Assessment and Collection Tool (M-PACT), a web-based data collection, tracking, and reporting tool through which MDOT, its five modal agencies and Maryland Transportation Authority (MdTA) can collect and process the required reporting information and documentation for both the MFR and AR yearly submission. Together the MFR and AR contain comprehensive information for over 170 performance measures. Prior to M-PACT, MDOT and the agencies used email, telephone and a variety of software packages to collect and process data. These methods were inefficient and often resulted in reporting inconsistencies, data errors, and delays in the production of final reports.

M-PACT provides a new efficient and effective framework for developing the MFR and AR. Serving as a central data entry and reporting tool, M-PACT improved consistency across MDOT, the modal agencies and MdTA, minimized data errors, improved data reliability, and has eased the reporting burden for Maryland's transportation agencies. In addition, the information collected using M-PACT (data definitions, location, ownership, method of calculation, and control procedures) has prepared MDOT for performance audits and ensured continuity when future staff changes occur.

> *"MFR is a statewide strategic planning approach to management that incorporates program-level performance measures."*

M-PACT serves the following primary functions: Collect all required information for the MFR report; Collect data and input material for the AR; Compile performance measure data, profiles, program performance and performance strategy reports for the production of the AR; Generate populated templates for the MFR-related reports (data tables, profiles, strategies, program performance, and budget book pages; and track the status of data submittals. M-PACT has brought new oversight to the overall workflow and organizational efficiency in the data collection and review process.

From a project manager's perspective, M-PACT has proven to be an extremely user-friendly, web-based, menu driven tool, even for the least experienced software user. Its efficiency compared to the previous methods of tracking data has been nothing short of miraculous. As an example, in 2006, my first year of managing both the MFR and AR efforts, it required approximately 336 man-hours to prepare the MFR and AR for final submission to DBM and the State Legislature. The main reason being, MDOT did not have a single, comprehensive system to collect and organize the data and produce the MFR and AR. As stated earlier in this article, it was a disjointed, manual, intensely laborious process. This year, I estimate the same process will be accomplished in 80 man-hours.

MDOT is recognized in Maryland as one of the best state agencies, if not the best, in implementing performance-based management practices and M-PACT has played a major role in MDOT's accomplishment. It is likely the role of performance measures in Maryland will expand to a more frequent reporting timescale (e.g., monthly or quarterly) in the near future. M-PACT provides a framework to help transition MDOT to this expanding role of performance measures.

# # # # #

SUSTAINABLE TRANSPORT AND ROLE OF PERFORMANCE INDICATORS

— HENRIK GUDMUNDSSON, SENIOR RESEARCHER hgu@dtf.dk — DANISH TECHNICAL UNIVERSITY/DTF

'Sustainable Transport' and 'Sustainable Mobility' have become headlines for transport planning and policy making around the world. In Europe it has taken center stage. A main aim of the European Union's Common Transport Policy is hence to ensure 'Sustainable Mobility,' which is broadly understood as a need "...to disconnect mobility from its adverse effects." Several European countries and cities have placed sustainability in an equally prominent position in their transport strategies.

There is, however not one commonly accepted, operational definition of sustainable transport or mobility. Some approaches emphasize protection of environmental systems like the atmosphere; others advance the 'triple bottom' line of economic, social and environmental objectives. Some are locked in on new technologies and fuels; others associate sustainability with changes in behavior and soft modes of transport. Indeed final sustainability of transport is hard to define because,

- the overall 'system limits' are not fully known; how much pressure can the environment sustain?
- transport is only one contributor to sustainability problems; how much must each 'sector' do?
- the response to changes is not known; how much can mobility be shifted before it backfires?

Such difficulties, however only increase the need for pointers to help chart the course along the way. A 'performance measurement' focus can contribute to advance this field in several ways. Performance measurement requires clear concepts and objectives, and calls for reliable calculation methods and indicator sets. By placing 'Sustainable Transport' in this context, transport agencies and analysts are pushed to make it measurable, operational and verifiable.

In Europe several research effort are ongoing to develop sustainable transport measures, and to make them useful for actual transport planning and policy making. Two examples are:

- COST Action 356 is a European research collaboration aiming 'Towards the Definition of a Measurable Environmentally Sustainable Transport.' So far the collaboration has identified the environmental impacts for which measures should be defined. The list includes 14 items (from Climate change, to Habitat fragmentation, to Noise). Next steps of the project are to identify appropriate indicators for each impact and to review methods that allow aggregate assessments of transport sustainability to be performed.

> *"So far the research suggests that it may require not only good measures, but also effective institutions and powerful communications to get the relevant information accepted."*

- the IMPACT project (funded by the MISTRA Foundation in Sweden) takes another approach. In this project the emphasis is on actual transport policy implementation, such as the 'congestion charging' trial in Stockholm, Sweden. One part of the research looks into the role of tools like sustainability performance measures. How do such measures become influential in the actual decisions, and why are important measures sometimes ignored? So far the research suggests that it may require not only good measures, but also effective institutions and powerful communication, to get the relevant information accepted. Otherwise measures may only have symbolic value.

Links to the two projects on sustainable transport indicators

COST 356: http://www.cost.esf.org/index.php?id=241&action_number=356

IMPACT: http://www.mistra.org/mobility

Other European projects:

TERM: http://reports.eea.europa.eu/eea_report_2007_1/en

SUMMA: http://www.summa-eu.org/

# # # # #

MULTIMODAL TRADEOFF ANALYSIS

— BY KIMBERLY SPENCE, AICP Kimberly.Spence@VDOT.Virginia.gov AND MARY LYNN TISCHER, PHD — VADOT

As transportation funding becomes more and more limited and highway expansion becomes increasingly difficult, many states and regions are beginning to examine the pay-off of their investments. The need to evaluate multimodal tradeoffs – the impacts of investing in one mode or program over another – is emerging as a critical step in making investment decisions.

Barriers to Multimodal Tradeoff Analysis

There are several barriers to multimodal tradeoffs. First, there tends to be limited flexibility in both federal and state funding programs due to the fact that most funding levels are determined by formula, which tends to limit flexibility; there is usually a need to distribute funds among regions and between urban and rural areas; and, the lack of funding overall tends to limit the "flexing" of funds among modes and/or programs.

Another barrier is related to the fact that the organization of federal and state transportation planning is typically compartmentalized by mode. Planning and implementing multimodal projects is made more difficult by the complex and cumbersome process of coordinating the efforts of multiple departments or agencies. As a result, multimodal plans tend to be an aggregation of individual modal plans not an integrated analysis of a multimodal transportation system.

The lack of performance measures, data, and tools creates another barrier. Performance data are more readily available for some modes than for others and data are available at varying levels of geographic scale so it is difficult to obtain statewide consistency. For example, tools for evaluating transportation impacts at the statewide level tend to be highway-oriented and lack sufficient detail to evaluate transit or pedestrian improvements.

> *"The need to evaluate multimodal tradeoffs—the impacts of investing in one mode or program over another—is emerging as a critical step in making investment decisions."*

Finally, more and more often, decision-makers identify specific projects for funding; this may be an attempt to streamline what can be a lengthy process or ensure that each mode and geographic region receives some share of available funding. A total reliance on performance-based planning and programming can reduce this flexibility and can be perceived unfavorably by decision-makers.

Multimodal Tradeoff Methodologies

Many states and regional planning bodies use performance measures in their long-range planning process. Most states tie long-range goals to performance measures and several states and regions use performance measures to monitor system performance. Regional planning bodies are more likely than states to use performance measures to identify projects in the long-range plan. In most cases, when performance measures are used to identify projects for programming, a funding level is assumed for each program and mode and then projects are prioritized within those levels. Few states actually conduct a multimodal tradeoff analysis to prioritize across modes. More states evaluate the degree to which projects meet overarching goals or employ a method that allows them to give additional "points" for incorporating additional modes. The most common multimodal tradeoff methods are described in the table below.

MULTIMODAL TRADEOFFS ANALYSIS CONTINUED ...

Common Multimodal Tradeoff Methods

Method	Description	Pros	Limitations
Benefit-Cost Analysis	Converts the benefits and costs associated with a project to a single ratio [Examples: VA's Rail Enhancement Fund and HERS-ST used by AZ, CA, NM, ND and OR]	Concept is simple "Levels the playing field" by converting disparate impacts to a common metric Helps compare different project types	Data intensive Requires value judgments Attribution of some factors, such as quality of life, can be arbitrary Ignores the magnitude of costs and benefits
Cost-Effectiveness Models	Reduces complex impacts to a single monetary value Compares the degree to which goals and objectives are met relative to the cost required to do so [Example: Hampton Roads Planning District Commission process for identifying CMAQ projects based on cost per ton of emission reduced]	Provides information to decision-makers regarding the relative "preferability" of one solution over another rather than identifying the single best solution Helps compare different project types	Works best when there are fewer objectives associated with the decision Data intensive Requires value judgments Attribution of some factors, such as quality of life, can be arbitrary
Least-Cost Planning	Converts project impacts to a single monetary value Measures the degree to which a project meets a pre-defined performance goal [Example: WA has legislation requiring least-cost planning and Puget Sound Regional Council has implemented various approaches]	Identifies the best solution as the lowest cost project that meets the performance goal Helps compare different project types	Data intensive Requires value judgments Attribution of some factors, such as quality of life, can be arbitrary
Mode-Neutral Approaches	Uses mode-neutral performance measures to evaluate impacts	Permits an unbiased assessment of modal alternatives Helps compare different project types	Difficult to find measures that are not dependent on a particular mode or program category Geographic scale often varies by mode May limit the objectives that are addressed
Multicriteria or Goals Achievement Analyses	Measures the degree to which a project meets broader goals Uses a scoring system to evaluate alternatives	Weights can be used to reflect policy objectives Can be more transparent as scores and rankings for each measure can be easily summarized and understood	Can be difficult to compare different project types

MULTIMODAL TRADEOFF ANALYSIS CONTINUED ...

Conclusions

Almost all states and MPOs address multiple modes in their long-range planning process and most states identify criteria for selecting projects for some programs or modes. However, most states allocate money to individual programs or modes and then prioritize within those groups. Many MPOs flex funds among programs or modes, and a few states and MPOs actually prioritize across modes. Oregon is a notable example.

Whether based on a purely objective project selection system or solely on political judgment or somewhere in-between, decision-making for project selection is becoming more closely linked to the planning process that preceded it. More and more, projects under consideration have resulted from a planning process that considered all modes and are consistent with the overarching vision identified in the long-range plan. The process is evolutionary and as planners and decision-makers become more experienced with the concepts, they expand to new, non-traditional measures and more integrated planning and programming practices. However, for the foreseeable future, the final decision will still be based, at least in part, on political judgment.

# # # # #

Featured Research
(starting on page 22)

Project NCHRP 15-34
Performance-based Analysis of Geometric Design of Highways and Streets

Project NCHRP 08-36
(Task 32)
Tools, Techniques, and Methods in Rural Transportation Planning

Project NCHRP 03-70
Multimodal Level of Service for Urban Streets

Project TCRP B-31
Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation

NCHRP 15-34 [ACTIVE]

PERFORMANCE-BASED ANALYSIS OF GEOMETRIC DESIGN OF HIGHWAYS AND STREETS

HTTP://WWW.TRB.ORG/TRBNET/PROJECTDISPLAY.ASP?PROJECTID=414

Funds: **$600,000**

Staff Responsibility: **B. Ray Derr**

Research Agency: **Pennsylvania Transportation Institute**

Principal Investigator: **Kevin Mahoney**

Effective Date: **July 14, 2006**

Completion Date: **January 13, 2009**

OBJECTIVE

The objective of this project is to develop a guide for performance-based analysis of geometric design throughout the development of a project. The guide should identify existing tools for estimating performance and illustrate their use. Further, the guide should describe additional tools or enhancements to existing tools needed for estimating performance and a plan for developing them.

STATUS

The Task 4 interim meeting was held on February 5, 2007. Task 6 is approximately 50% complete for candidate performance measures. Task 5 has been deferred until Task 6 is complete. A presentation on the project will be made at the Urban Streets Symposium on June 27, 2007 in Seattle, Washington.

BACKGROUND

Most highway and street design processes rely on standards that set minimum values or ranges of values for design features. These standards are intended to provide operational safety, efficiency, and comfort for the traveler, but it is difficult or impossible for the designer to characterize quantitatively how the facility will perform. For both new construction and reconstruction of highways and streets, stakeholders and decision makers increasingly desire reasonable measures of the effect of geometric design decisions on the facility's performance for all of its users.

Each agency has its own process for designing a highway or street. Three critical stages in the process are project initiation (i.e., setting the project's purpose, need, and scope), preliminary design (e.g., analyzing alternative designs and environmental impacts and setting design criteria), and final design (i.e., preparing the construction plans); these stages may have different names in different agencies. Although the expected performance of the facility is only one of the factors that must be considered in designing a highway or street, a better understanding of the expected performance should result in better decisions during these stages. Research is needed to provide the designer with the tools to evaluate the performance of different design alternatives objectively.

"Research is needed to provide the designer with the tools to evaluate the performance of different design alternatives objectively."

TASK

Task 1. Describe the decisions related to geometric design that need to be made at each of the three critical stages in the project development process listed earlier in Background. Describe the data that are available and relevant to estimating the performance of geometric elements at each of these stages.

PERFORMANCE-BASED ANALYSIS CONTINUED ...

Task 2. Identify aspects of street and highway performance that are of interest to transportation project stakeholders and decision makers. These aspects should include, but are not limited to, safety, mobility, and accessibility. For each aspect, identify candidate performance measures that are sensitive to the geometric design.

Task 3. Review completed and ongoing research to identify tools for estimating the performance of a geometric design (e.g., *Highway Capacity Manual, Interactive Highway Safety Design Model, Highway Safety Manual,* and *SafetyAnalyst*). Based on the literature and the research team's experience, assess each tool's usefulness in performance-based analysis of geometric design.

Task 4. Submit an interim report, within 6 months, reviewing the work done in Tasks 1 through 3 and recommending a suitable number of performance measures and analysis tools for further study in this project. The report should also include a refined work plan for the remaining project tasks and a detailed outline of the guide. Meet with the panel to discuss the interim report.

Task 5. Finalize the performance measures needed to make decisions at each of the three critical stages of the project development process.

Task 6. For existing analysis tools, describe their data needs and capability to estimate the Task 5 performance measures. Describe additional tools or enhancements to existing tools needed for estimating performance and identify the data needed to use the tools. Update the work plan for developing the additional tools and tool enhancements.

Task 7. For the data identified in Task 6, assess their availability and accuracy during the different phases of the project delivery process, both currently and in the near future.

Task 8. Describe a generic framework for managing the data and performance-measure information throughout the project development process. The framework should include functional descriptions of the analysis tools and interfaces to them.

Task 9. Develop a guide for performance-based analysis of geometric design throughout the project development process. The guide should focus on practical applications using currently available data and analysis tools, and it should also present a vision of a future system facilitating better decisions using better analysis tools and additional data. The guide should include case studies to illustrate the use of the approach at each of the three stages in the project development process. The case studies should describe collection of the needed data (and adjustments due to missing data), selection and use of the analysis tools, and use of the performance measures in decision making.

Task 10. Submit a final report that documents the entire research effort and includes the Task 9 guide as a stand-alone document. The report should identify recommendations for text changes in the AASHTO *Policy on Geometric Design of Highways and Streets* related tools. Obtain information from practitioners and stakeholders on issues associated with performance management programs (*3.*) Based on information obtained in Tasks 1 and 2, **prepare a series of case studies of transportation performance management programs and related tools and how they are being integrated into decision making in state DOTs.** Obtain NCHRP approval of a sample case study and the selection of other cases prior to completing this task. (*4.*) Based on the results of Tasks 1 through 3, develop a preliminary outline of the guidebook, including a draft glossary of terms related to performance management programs and related tools. (*5.*) Prepare and submit an interim report that documents the work performed and findings from Tasks 1 through 4. Present the interim report and propose necessary revisions to the work plan at a meeting with the project panel. (*6.*) Based on panel guidance from Task 5, prepare an annotated outline and sample sections of the guidebook and develop appropriate presentation materials for practitioner-review sessions in Task 7. Submit the outline and presentation materials to the panel for review, comment, and approval. (*7.*) Present the annotated outline of the guidebook developed in Task 6 to selected professional practitioner-review sessions to obtain input and feedback and to gauge reaction to the format and content of the guidebook. (*8.*) Based on input and feedback received in the Task 7 review sessions, develop the guidebook. (*9.*) Submit a final report and the guidebook for panel review and approval.

# # # # #

Funds: **$100,000**

Research Agency: **Cambridge Systematics**

Investigator: **Stephen Decker**

Effective Date: **December 3, 2002**

Completion Date: **January 31, 2004**

Comments: **Completed—Final report sent to AASHTO**

This project will research successful applications of tools, techniques, and methods used in rural transportation planning, project prioritization, and rural transportation service delivery. The research will identify an array of rural transportation planning issues along with tools that have been successfully used in addressing them. The research will report on the history, level of effort needed, benefits and detriments (intended and unintended consequences), and the rural intergovernmental decision-making context used to approve, develop, and deploy the tool, technique, or method. The intergovernmental context of the application will include the various consultative processes used between the involved governmental entities, the history of the issue being addressed, the enabling processes (agreements, process changes, state statutes) that were used, and the likelihood of successful implementation in other intergovernmental contexts. The unique context of the various rural consultative processes will be explored through case studies to include information on the implementing agencies, involved local officials, and FHWA or FTA program managers.

"The research will identify an array of rural transportation planning issues along with tools that have been successfully used in addressing them."

STATUS

Completed—Final report sent to AASHTO.

# # # # #

NCHRP 03-70 [ACTIVE]

MULTIMODEL LEVEL OF SERVICE FOR URBAN STREETS

HTTP://WWW.TRB.ORG/TRBNET/PROJECTDISPLAY.ASP?PROJECTID=824

Funds: **$1,100,000**

Staff Responsibility: **Dianne S. Schwager**

Research Agency: **Dowling and Associates**

Investigator: **Rick Dowling**

Effective Date: **March 14, 2003**

Completion Date: **December 31, 2007**

"The various modes interact with each other such that improvements in the quality of service for one mode may improve or lower the quality of service for another mode."

BACKGROUND

In many urban areas throughout the United States, there is a desire to evaluate transportation services of roadways from a multimodal perspective. Improvements to non-automobile modes are often emphasized to achieve community goals such as "Smart Growth" and curbing urban sprawl. The Transportation Equity Act for the 21st Century (TEA-21) and its predecessor the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) call for mainstreaming transit, pedestrian, and bicycle projects into the planning, design, and operation of the U.S. transportation system. In addition to measuring the levels of service for automobile users, measuring the levels of service for transit, pedestrian and bicycle users along U.S. roadways is also desired.

The current chapters of the Highway Capacity Manual 2000 (HCM 2000) that deal with urban streets essentially address level of service (LOS) only for automobile users. These chapters, perhaps more than any other part of the HCM 2000, should be the centerpiece of multimodal traffic analysis. Automobiles, trucks, transit, bicycles, and pedestrians share urban streets. The various modes interact with each other such that improvements in the quality of service for one mode may improve or lower the quality of service for another mode.

Nationally recognized analysis techniques exist for the highway (HCM 2000) and transit modes [Transit Capacity and Quality of Service Manual (TCQSM)]. Analysis techniques for the pedestrian and bicycle modes, however, are not as well established. Although there are some components of a multimodal analysis approach, such as techniques for determining the impact of automobile traffic on bus lanes in the TCQSM, no nationally accepted method exists for combining the automobile, transit, bicycle, and pedestrian modes in an integrated analysis. Some initial research has been conducted for the Florida Department of Transportation (FDOT) that resulted in the state adopting planning and preliminary engineering multimodal LOS measures, analysis techniques, and software. (This work is documented in Transportation Research Record 1776, Multimodal Level of Service at a Planning Level, Guttenplan, et al. 2001).

MULTIMODAL LEVEL OF SERVICE CONTINUED ...

Compounding the challenge of developing an integrated multimodal analysis is the fact that most evaluation techniques have been developed from a modal perspective and LOS thresholds may not match well when one mode is compared with another. It is assumed that this project will continue the practice of using the same LOS for automobiles and trucks.

OBJECTIVE

This is a two-stage research project. The objective of the first stage is to develop and test a framework and enhanced methods for determining levels of service for automobile, transit, bicycle, and pedestrian modes on urban streets, in particular with respect for the interaction among the modes. The objective of the second stage of the research is to validate and refine the framework and enhanced methods developed in Stage 1, propose new material for future editions of the HCM and the TCQSM, and develop sample problems and initial software.

"The objective of the first stage is to develop and test a framework and enhance methods for determining levels of service. . . The objective of the second stage of the research is to validate and refine the framework. . ."

Accomplishment of the project objective will require at least the following tasks.

STAGE I TASKS (1.) Review state of practice. (2.) Address the comparability of LOS across modes. (3.) Identify problem areas and develop a framework and enhanced methods. (4.) Prepare a working paper . (5.) Propose an approach to test the framework . (6.) Prepare an interim report that documents the results of Tasks 1 through 5 and prepare a preliminary research plan and budget for Stage 2 of this research project .

STAGE II TASKS (1.) Prepare updated level of service (LOS) framework (2 .) Collect data on LOS perceptions of the traveling public. (3 .) Fit LOS models to data. (4.) Prepare Interim Report. (5.) Develop a draft chapter for the HCM, that presents the framework and enhanced methods for multimodal LOS analysis for urban streets at planning and operational levels. (6 .) Develop software engine to implement LOS models. (7.) Prepare sample problems. (8 .) Prepare a final report for this research project. (9 .) Present project status and results to appropriate TRB committees.

STATUS

The project was initiated Spring 2003. This is a 2-stage project. The research team has completed the first stage of this project. $650,000 in funding for Stage 2 have been approved for this project. This second phase is currently underway.

# # # # #

TCRP B-31 [COMPLETED]

GUIDEBOOK FOR MEASURING, ASSESSING, AND IMPROVING PERFORMANCE OF DEMAND-RESPONSE TRANSPORTATION

HTTP://WWW.TRB.ORG/TRBNET/PROJECTDISPLAY.ASP?PROJECTID=1054

Funds: **$250,000**

Staff Responsibility: **B. Ray Derr**

Research Agency: **KFH Group**

Principal Investigator: **Elizabeth Ellis**

Effective Date: **September 8, 2005**

Completion Date: **March 8, 2007**

BACKGROUND

Demand-response transportation (DRT) systems are under increasing pressure to improve performance because of increased demand for service and financial constraints. Improving DRT performance requires understanding the characteristics of DRT services and the factors that affect performance. To identify opportunities for improvement, DRT systems need better data and methods to measure and assess performance consistently and systematically.

Assessing and improving performance of DRT systems is complicated because there are many types of DRT systems, and the performance of DRT systems is influenced by many factors--both controllable and uncontrollable. Controllable factors are those within the DRT operator's domain, such as service policies (e.g., pickup time windows, maximum allowed onboard time, and curb-to-curb versus door-to-door service); fleet mix (e.g., vehicle capacity, vehicle design, and fleet size); trip-scheduling method (i.e., the extent to which it produces viable and efficient vehicle routes and schedules); dispatch control method (e.g., re-scheduling late trips and making use of capacity in the event of late cancellations and passenger no-shows); and driver and dispatcher training. Uncontrollable factors include physical and geographical factors (e.g., size of service area and geographic barriers, such as bridges); service type (e.g., ADA complementary paratransit service versus other demand-response services); and passenger demand.

The existence of diverse types of DRT systems affected by different controllable and uncontrollable factors makes it difficult to compare the performance of different DRT systems and identify opportunities for improvement. For example, a DRT system with low ridership could be operating in an area where few passengers are eligible to use a service. Conversely, low ridership could be caused by poor service scheduling that does not maximize vehicle utilization and ride-sharing.

DRT systems need reliable data and useful measures that allow for meaningful assessments of performance over time and across DRT systems. Historically, data collection and reporting have not been rigorous among DRT systems. Data on performance have not been consistently defined and methods for collecting data have not been consistently or rigorously applied. Similarly, performance measures have not been widely or consistently used as an element of performance assessments. For example, service effectiveness for DRT, a measure of utilization or productivity, can be defined as the number of passenger-trips per vehicle-hour of operation. However, the exact definitions of the terms "passenger-trips" and "vehicle-hours" vary across systems.

Consequently, research is needed to provide guidance on the types of data and measures that are needed to allow for meaningful assessments of and improvements to DRT performance.

# # # # #

GUIDEBOOK FOR MEASURING CONTINUED ...

OBJECTIVE

The objective of this research is to develop a guidebook for measuring, assessing, and improving the performance of demand-response transportation (DRT) systems. The methods presented in the guidebook should address the diversity of DRT services, service areas, and passengers. The guidebook should identify the important controllable factors that affect DRT performance and should include methods based on reliable data and meaningful measures that allow relevant assessments of performance over time and across DRT systems.

STATUS

The project is completed and the report has been approved by the panel. The report should be published in early 2008. A second phase to this project focusing on rural transit was approved and funded by the TOPS Committee in October 2006 and is currently underway.

# # # # #

TRB & FHWA Performance Measurement Web Boards!

Both the TRB Performance Measurement Committee and the FHWA have coordinated the development of their websites to support the needs of the TRB Performance Measurement Committee as well as the needs of other performance measurement related Work Groups. The TRB board (www.trb-performancemeasurement.org) has been completed in featuring the PMC Newsletter, Scope, & Strategic Plan, Discussion boards, auto mailing of site changes and Chat for members on the mailing list.

The FHWA board (http://knowledge.fhwa.dot.gov/cops/pm.nsf/home) features direct links to other performance measurement related communities in addition to auto mailing of site changes and discussion boards for all users.

Please contact connie.yew@dot.gov for questions regarding these sites.

PM Research Archive Matrix

Project 20-7 (Task 202) FY 2004 Guide to Benchmarking Operations Performance Measures	Project 8-36 Task 47 Effective Organization of Performance Measurement	Project 7-15 FY 2004 Cost-Effective Measures and Planning Procedures for Travel Time, Delay and Reliability	Project 20-63, FY 2004 Performance Measurement Tool Box and Reporting System for Research Programs and Projects
Project 20-24 (20), FY 2003 Using Performance Measures to Manage Change in State Departments of Transportation	Project 3-68 FY 2003 Guide to Effective Freeway Performance Measurement	Project 17-26, FY 2003 Methodology to Predict the Safety Performance of Urban and Suburban Arterials	Project 20-24 (30), FY 2003 Performance Measurement in Context Sensitive Design
Project 20-60, FY 2003 Performance Measures and Targets for Transportation Asset Management	Project 8-43 FY 2002 Methods for Forecasting Statewide Freight Movements and Related Performance Measures	Project 20-57, FY 2002 Analytic Tools to Support Transportation Asset Management	Project 20-24 (14), FY 2001 Managing Change in State Departments of Transportation
Project 6-14, FY 2000 Feasibility of Using Friction Indicators to Improve Winter Maintenance Operations and Mobility	Project 8-32 (2)A, FY 2000 A guidebook for Performance-Based Transportation Planning	Project 2-22, FY 1999 Case Studies on Communicating the Economic Benefits of Transportation Investments	Project 2-19, FY 1997 Guidance on Using Existing Analytic Tools for Evaluating Transportation Investments
Project 2-22, FY 1997 Needs in Communicating the Economic Impacts of Transportation Investment	Project 1-33 FY 1995 Methodology to Improve Pavement-Investment Decisions	Project 3-55, FY 1995 Performance Measures and Levels of Service in the Year 2000 Highway Capacity Manual	Project 8-32 (2), FY 1994 Multimodal Transportation: Development of a Performance-Based Planning Process
Project 20-24 , FY 1994 Customer Based Quality in Transportation	Project 2-17, FY 1991 Measuring the Relationship Between Freight Transportation Services and Industry Productivity	Project 20-24 (06) , FY 1991 Performance Measures for State Highway and Transportation Agencies	Project 2-17(3), FY 1993 Macroeconomic Analysis of the Linkages Between Transportation Investments and Economic Performance
Project 3-55 (4), FY 1995 Performance Measures and Levels of Service in the Year 2000 Highway Capacity Manual	Project 2-17(3)A, FY 1994 Update and Enhancement of Data-set for Macroeconomic Analysis of Transportation Investments and Economic Performance	Project TCRP E-03A, FY 1997 Applications for Improved Inventory Management for Public Transit Systems	Project TCRP G-06, FY 2003 A Guidebook for Developing a Transit Performance-System
Project TCRP B-11, FY 1998 Customer Defined Transit Service Quality	Project TCRP F-03, FY 1992 Total Quality Management in Public Transportation	Project NCHRP 311, FY 2003 Performance Measures of Operational Effectiveness for Highway Segments and Systems	Project NCHRP 300, FY 2001 Performance Measures for Research, Development and Technology Programs
Project TCRP SG-10, FY 003 Use of Performance-Based Measures in Allocating Transit Funding	Project TCRP 40, FY 2001 A Challenged Employment System: Hiring, Training, Performance Evaluation, and Retention of Bus Operators	Project TCRP 22, FY 2001 Monitoring Bus Maintenance Performance	Project TCRP 7, FY 2001 The Role of Performance Based Measures in Allocating Funding for Transit Operations
Project 8-32, FY1995 Multimodal Transportation: Development of a Performance-Based Planning Process	Project 20-60, FY 2003 Performance Measures and Targets for Transportation Asset Management	Project 3-79 FY 2004 Measuring and Predicting the Performance of Automobile Traffic on Urban Streets	Project 6-17, FY 2005 Performance Measures for Snow and Ice Control Operations
Project TCRP E-03A, FY 2006 Applications for Improved Inventory Management for Public Transit Systems	Project NCHRP 20-5, FY 1967 Synthesis of Information Related to Highway Problems	Project TCRP 88, FY 2006 A Guidebook for Performance-Based Transportation Planning	Project NCHRP 8-32(2)A, FY 2000 Development of a Performance-Based Planning Process

continued on next page

PM Research Archive Matrix continued. . .

Project NCHRP 551 FY 2006 Performance Measures and Targets for Transportation Asset Management	Project 8-36 Task 61 Monetary Valuation Per Dollar of Investment in Different Performance Measures	Project 14-13 FY 1999 Customer-Driven Benchmarking for Highway Maintenance Activities	Project NCHRP 08-36 Task 47 Effective Organization of Perform-ance Measurement
Project NCHRP 08-62 Transportation Performance Management Programs—Insight from Practitioners	Project NCHRP 20-36 Highway Research and Technology—International Information Sharing	Project NCHRP 09-19 Superpave Support and Performance Models Management	Project NCHRP 15-34 Performance-Based Analysis of Geometric Design of Highways and Streets
Project NCHRP 08-36 Task 32 Tools, Techniques, and Methods in Rural Transportation Planning	Project NCHRP 03-70 Multimodal Level of Service Analysis For Urban Streets	Project TCRP B-31 Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation	

Performance Measurement Committee (ABC30) Liaisons		
	Committee Name	Liaison
ABC10	Strategic Management	Bob Johns
ABC40	Asset management	Lance Neumann
ADA20	Metropolitan Policy, Planning and Processes	Bob Winick
ADA50	Transportation Programming Planning and Systems Evaluation	Jim Glock
AHB40	Highway Capacity & Quality of Service	John Zegeer
AP010	Transit Management & Performance	Kathryn Coffel
ADA10	Statewide Multimodal Planning	Ysela Llort
ABC20	Management & Productivity	Sandy Straehl
ABJ20	Statewide Transportation Data & Information Systems	Anita Vandervalk
ADD40T	Sustainability	Josias Zietsman
ADA70	Access Management	Kathy Facer
AHB10	Regional Transportation Systems Management & Operations	Bob Winick/John Leonard
ANB10	Transportation Safety Management	Angshuman Guin
ANB20	Safety Data Analysis & Evaluation	Ramkumar Venkatanarayana
AT015	Freight Transportation Planning & Logistics	Ed Strocko
AHD36	Bridge Management	Paul Jenson
AFD10	Pavement Management Systems	Roy Jurgens
AHB10	Regional Transportation Systems Management & Operations	Michael Berman
AHD65	Winter Maintenance	Richard Hanneman
ABE20	Transportation Economics	Doug McLeod
AO010	International Activities	Michael Meyer
	Organizational Liaisons:	
	FHWA	Gloria Shepherd
	FTA	Ron Fisher
	AASHTO SCOQ	Connie Yew/Tony Kane
	AASHTO SCOH SSOM (Doug Rose, Chair)	Tony Kane
	AASHTO SCOP	Sandy Straehl
	AASHTO SCOP/SCOH Asset Management Subcommittee	Sandy Straehl