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**Strategic Management
Research Needs for State
Departments of Transportation**

STRATEGIC MANAGEMENT RESEARCH NEEDS FOR STATE DEPARTMENTS OF TRANSPORTATION

Developed by Participants in the

CEO WORKSHOP ON MANAGING CHANGE IN
STATE DEPARTMENTS OF TRANSPORTATION

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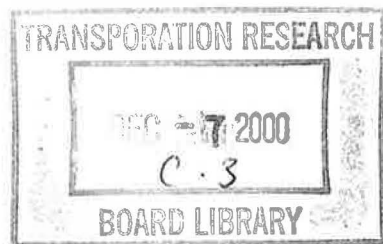
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Preface

This Transportation Research Board (TRB) Circular is published at the recommendation of the Committee on Strategic Management, which has provided extensive review of the contents. The research needs statements included in this document are under consideration for funding by the panel for transportation leaders for NCHRP Project 20-24. The PowerPoint slides and other products of the CEO Workshop on Managing Change in State Departments of Transportation are being used to stimulate discussion at regional meetings and within state DOTs.

This Circular is authored by Cinde Weatherby Gilliland of the Texas Transportation Institute. The Strategic Management Committee acknowledges the significant efforts by Ms. Gilliland in creating this document. The Committee also acknowledges special efforts in providing support for the CEO Workshop by Jon M. Williams and Robert W. Neihouse of TRB; John Horsley and Deborah Buchacz of the American Association of State Highway and Transportation Officials (AASHTO); Joseph S. Toole, Fred Hemphill, Conni Morse, and Barbara Murdock of the Federal Highway Administration (FHWA); Robert Benke, David Ekern, and Robert Ward of the Minnesota Department of Transportation; and Laura Fuller, Erin Streff, and Sarah Iverson of the University of Minnesota Center for Transportation Studies.



Contents

INTRODUCTION AND OVERVIEW	4
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STRATEGIC PLANNING-DRIVEN INITIATIVES:

Public Connection, Priority-Settling Process, and Performance Measurement	11
Overview	11
Key Challenges	12
Current Activities.....	12
Lessons Learned.....	13
Research Needs	13
Strategic Planning-Driven Research Needs Statements	15
A-1. Best Practices in Performance Measurement for Strategic Management.....	15
A-2. Obtaining Customer Input on Needs and Satisfaction.....	16
A-3. Building Strong Legislative Support for Strategic Transportation Agendas	18
A-4. Effectively Marketing Transportation Department Products and Services	19
A-5. Linking Strategic Planning to Resource and Implementation Decisions	20

WORKFORCE- AND REORGANIZATION-DRIVEN INITIATIVES:

Focus on Internal Results, Organizational Reconfiguration, and Staff Recruitment and Retention	23
Overview	23
Key Challenges	24
Current Activities.....	24
Lessons Learned.....	25
Research Needs	26
Workforce- and Reorganization-Driven Research Needs Statements	28
B-1. Effective Practices in Employee Succession Planning	28
B-2. Impacts of Technology and Information Needs for Changes of Mission.....	29
B-3. Best Practices in Employee Development	29
B-4. Best Practices in Recruitment and Retention.....	30
B-5. Identifying Core Staff Competencies for 21st Century DOTs.....	31

PROCESS- AND PROGRAM DELIVERY-DRIVEN INITIATIVES:

Process Reengineering and Program Delivery Modifications	32
Overview	32
Key Challenges	33
Current Activities.....	34
Lessons Learned.....	35
Research Needs	36
Process- and Program Delivery-Driven Research Needs Statements	37
C-1. Utilizing Private Sector Resources	37
C-2. Internal Reengineering.....	37

C-3. Streamlining Conventional Procurement Methods	38
C-4. Innovative Contracting.....	38
C-5. Cooperative Relationships	39
C-6. Conventional Partnering	40

CROSS-CUTTING INITIATIVES:

Partnering and Knowledge Sharing.....	41
Overview	41
Research Needs.....	41
Cross-Cutting Research Needs Statements	43
D-1. Cross-Jurisdictional Sharing of Services Between Transportation Providers	43
D-2. Best Practices of DOT Partnering with Nontraditional Organizations.....	43
D-3. GASB 34 Impacts on State DOT Infrastructure Asset Management and Finance	44
D-4. Best Practices for Facilitating Citizen Interaction and Engaging the Public in Project Planning and Development.....	46
D-5. Quick Response Methods for Sharing Management Innovations	47
D-6. Dealing with Changing Fuel Supply, Price, and Alternatives	48

APPENDIXES

A. MANAGING CHANGE IN STATE DEPARTMENTS OF TRANSPORTATION: Workshop Program	50
B. CONFERENCE PARTICIPANTS	56
C. SLIDE PRESENTATION SUMMARIZING ISSUES.....	67
D. SUMMARY OF CEO DISCUSSION SESSIONS: Where Are We Going? What Have We Learned?	72
E. MANAGING CHANGE IN STATE DEPARTMENTS OF TRANSPORTATION: Executive Summary of Research Agenda	76

SPECIAL NOTE: Brief summaries of the experiences of the state DOTs in strategic planning-driven initiatives, workforce and reorganization-driven initiatives, and process and program delivery-driven initiatives are published in a companion document to this Circular.

Introduction and Overview

State Departments of Transportation are operating in an environment of unprecedented change. Changing demands related to transportation services, new technologies, workforce composition, stakeholders' concerns, and a constantly changing political environment create both future uncertainty and a need for institutional change. In response to these challenges, state departments of transportation (DOTs) have undertaken a range of initiatives such as strategic planning, restructuring, performance measurement, process engineering, and outsourcing. AASHTO's report on "The Changing State DOT" identified drivers of change and approaches being taken by state DOTs in change management.

A 2-day workshop in Minneapolis from June 25 to 27, 2000 responded to a strong interest in having peer-to-peer discussions among CEOs and senior staff of the state DOTs about their experiences in managing internal and external change. The transportation executives shared their experiences in three facilitated sessions, using a "conversation circle" format. Sessions were organized around:

- Strategic Planning-Driven Initiatives,
- Workforce and Reorganization-Driven Initiatives, and
- Process and Program Delivery-Driven Initiatives.

Workshop participants used the output of these discussions to identify research that would help state DOTs lead and manage their changing organizations. In addition to crafting research problem statements in the three subject areas, participants added a further category called "Cross-Cutting Issues."

WORKSHOP PREPARATION

The success of this highly relevant and well-received workshop is due to the cooperative work of three organizations: the Transportation Research Board, American Association of Highway and Transportation Officials, and the Federal Highway Administration. The resulting problem statements can be directly credited to the chief executives and executive staff of state departments of transportation who participated in the workshop.

The workshop benefited from thorough advance preparation, described below.

Workshop Steering Committee

Discussions of the TRB Strategic Management Committee pointed to the need for a national session to address the issue of change in state DOTs and to develop a detailed research agenda that would help the DOTs. Planning for the workshop was initiated at the July 1999 TRB joint summer meeting.

Robert C. Johns, chair of the TRB Committee on Strategic Management, coordinated his committee's effort in planning, executing, and documenting the workshop and in soliciting the involvement of AASHTO and FHWA. Subcommittee task leaders included Stephen C. Lockwood and Kathleen E. Stein, responsible for planning

the CEO discussion sessions; Mark L. Ford, Hyun-A Park, and David Damm-Luhr, responsible for planning the research needs identification sessions; and Cinde Weatherby Gilliland and Joseph S. Toole, responsible for documenting the workshop.

The efforts were actively supported by Anthony R. Kane, FHWA Executive Director; Thomas R. Warne and John Horsley, President and Executive Director of AASHTO; Pete Rahn, Secretary of the New Mexico Highway and Transportation Department; Michael M. Ryan, Deputy Secretary for Highway Administration of the Pennsylvania Department of Transportation; and Richard Millard, Director of Human Resources for the Missouri Department of Transportation, who represented AASHTO on the planning committee.

The Minnesota Department of Transportation played an instrumental role in securing the involvement of AASHTO and hosting the workshop in Minneapolis. Robert Benke, Director of Research and Strategic Services, and David S. Ekern, Assistant Commissioner, led the Minnesota DOT (MnDOT) activities.

TRB Senior Program Officer Jon M. Williams provided continuing support throughout the workshop planning and its execution. Also providing assistance were Robert W. Neihouse, TRB conference coordinator; Deborah Buchacz, AASHTO Assistant Program Director for Policy and Planning; and Conni G. Morse, FHWA marketing specialist.

State Departments of Transportation Experience Summaries

To make the workshop session as productive as possible, the workshop sponsors requested that each state chief executive officer prepare a two-page summary for each of the three subject areas to be addressed. AASHTO president Warne forwarded the letter requesting these summaries to the CEOs of the state DOTs. In addressing the subjects of strategic planning, workforce and reorganization, and process and program delivery, each summary was to include the following:

- Key challenges (major obstacles faced in undertaking the initiatives);
- Activities (steps taken for the initiatives, and results to date);
- Lessons learned (what has worked, what has not); and
- Research needed (most important items for research).

Summaries were assembled by TRB and FHWA and presented to the participants at the workshop.

The two-page briefs contributed by state DOTs are summarized in this circular at the beginning of each subject section, preceding the resulting problem statements. They are included in total in a companion document to this circular.

INVITED PARTICIPANTS

Given the activities of the Strategic Management Committee and its members, there was a need to focus on the subject of change in DOTs at the highest level. The invitation list for the workshop included each state DOT's chief executive officer. In addition, each state DOT could send two senior staff members. The only others invited were members

of the Strategic Management Committee, the chairs of related TRB committees, and representatives of the other sponsors, FHWA, AASHTO, and MnDOT.

Twenty CEOs of state DOTs participated in the workshop and 35 state DOT agencies were represented by CEOs or senior staff. A list of participants is included in Appendix B (page 56).

WORKSHOP NOTEBOOK

Participants were presented with a notebook at the workshop that included not only the two-page summaries of experience prepared by the state DOTs, but also the following:

- *The Changing State DOT—Executive Summary*, prepared for AASHTO by Stephen C. Lockwood of Parsons Brinckerhoff (1998).
- A summary of *Staffing Plan Survey of State Transportation Agencies*, prepared by the Research Bureau of the New Mexico State Highway and Transportation Department in cooperation with FHWA (September 1999).
- The executive summary of *National Cooperative Highway Research Program Report 371—State Departments of Transportation: Strategies for Change*, prepared by the National Academy of Public Administration, in cooperation with the University of North Carolina Institute for Transportation Research and Education (1995).
- *Consensus Report on AASHTO Leader, Staff and External Constituency Interviews*, prepared by the Forbes Group and TransTech Management Inc, for the AASHTO Strategic Planning Task Force (April 25, 2000).

The workbook also included the agenda for the workshop, included in this circular as Appendix A (page 50).

WORKSHOP ACTIVITIES

Setting the Stage

Local workshop hosts Robert Johns, Workshop Planning Committee chair and Deputy Director of the Center for Transportation Studies of the University of Minnesota, and Elwyn Tinklenberg, Commissioner of the Minnesota Department of Transportation, welcomed participants at the opening session. AASHTO President Thomas R. Warne, Executive Director and CEO of the Utah Department of Transportation, set the stage for the workshop by talking about the challenges for the 21st Century Transportation Agency.

Warne suggested that unless state DOTs deal with change they cannot succeed. He observed four areas of significant change: the workforce (with a large number of retirements, followed by replacements with much less experience); global economy impacts on transportation; technology development; and increased public expectations.

Warne said that change is very challenging and can be painful. He suggested that DOTs have reacted slowly to change and can no longer afford to do so.

Stephen C. Lockwood presented the highlights of the AASHTO survey that he conducted and summarized in the report *The Changing State DOT*. The extensive survey was completed in 1998 and looked at the “state-of-the-practice” in the state DOTs. It

followed an international survey in 1997 that was jointly sponsored by AASHTO and FHWA, which looked at the same issues abroad and identified new approaches for dealing with activities such as privatization of major organizational functions. Lockwood observed that there is much to be learned from the experiences of the DOTs, as there are many energetic and vital programs underway.

Elwyn Tinklenberg addressed the evening session, substituting for Minnesota Governor Jesse Ventura. Commissioner Tinklenberg described MnDOT's participation in Governor Ventura's "Moving Minnesota" program. He said that the emphasis of the Ventura administration has been on taking risks and doing what is necessary to preserve healthy communities.

Conversation Sessions

Kathleen E. Stein, a longtime member of the Strategic Management Committee and a public involvement professional, facilitated the CEO "conversation" sessions. Robert Johns assisted her.

A conversation circle format was used, which allowed up to eight CEOs at a time to discuss challenges and lessons learned in their organizations in the three topic areas. The CEOs, or the highest ranking state DOT official present, could enter or leave the circle as they wished. Other workshop attendees observed these conversations with the assignment of thinking of research implications to be addressed the next day.

CEO Session I, Strategic Planning-Driven Initiatives

This discussion was moderated by Elwyn Tinklenberg. Key points included how to make strategic planning work, its connection to the public, its implementation in the budget, the need for performance measures, and the forces that are causing state DOTs to redefine their missions.

CEO Session II, Workforce- and Reorganization-Driven Initiatives

Henry Hungerbeeler, Director of the Missouri DOT, moderated the session. Key discussion points included workforce development, restructuring, impacts of outsourcing, succession planning, attracting a new generation of employees, and the need for continuous training.

CEO Session III, Process- and Program Delivery-Driven Initiatives

Thomas Barry, Secretary of the Florida DOT, was moderator. Key discussion points included the push by the public for faster delivery, innovations underway in outsourcing and restructuring, the need for new project management skills, and creative opportunities for outsourcing and for partnering with other organizations.

Workshop Summary and Documentation

Leaders of the three sponsoring organizations were charged with paying special attention to discussions of the first day of the workshop. Robert Skinner, John Horsley, and

Anthony Kane, executive directors respectively of TRB, AASHTO, and FHWA, summarized comments and made observations about research needs and the next steps for DOTs in dealing with change.

Skinner summarized the workshop discussions by commenting that the management of state DOTs is a tough job and getting tougher. He supported the suggestions for institutionalizing the exchange of information among the states so as to encourage creativity while not "reinventing the wheel." He also commented that there are "research opportunities galore."

Horsley observed that state DOTs are becoming more and more customer driven and are dealing with a business environment that is happening "at the speed of life." He said that a higher priority is being placed on motivating employees and in training them not only to perform but also to manage the performance of others through outsourcing. Horsley said that AASHTO plans to continue to be a catalyst in providing a means for states to share their experiences.

Kane forecast the need of state DOTs for continued sharing of knowledge, national or pooled fund research, training, scanning, and dissemination of best practices. He also predicted a need for changes in local, state, and federal regulations and laws to support the evolving state DOT operations. Kane said he sensed a clear urgency for moving forward with sharing best practices and research quickly.

During the first day of the workshop FHWA staff, led by Joe Toole, took notes and prepared a computerized slide presentation that summarized the day's discussion and the remarks of Horsley, Kane, and Skinner. The resulting slide presentation, coordinated by Joseph Toole, is included in Appendix C (page 67). The presentation was circulated via e-mail to TRB and AASHTO mailing lists following the workshop and has been used by participants in their own states and for other meetings. At the opening session of TRB's Mid-Year Committee Meeting July 6–8, 2000, in San Diego, the slide show was used to introduce presentations by Mary Peters, Director of the Arizona DOT, and Tom Warne, CEO of the Utah DOT, on the changing state DOT.

RESEARCH PROBLEM STATEMENT DEVELOPMENT

The purpose of the workshop on the changing state DOT was twofold. The first goal was to facilitate open discussion of common challenges among the leaders of state DOTs; the second was to identify the research topics that can best help the leaders tackle these challenges.

The research problem statements were drafted at the workshop in a process that was developed by the TRB Strategic Management Committee. Mark Ford, Senior Project Manager, HDR, Inc., chaired the group responsible for problem statement development. Hyun-A. Park, Principal, Cambridge Systematics, Inc., and David Damm-Luhr, Chief of the Change Management Division of the Volpe Center of the U.S. Department of Transportation's Research and Special Programs Administration, assisted him.

On the second day of the workshop, there was a review of the previous day's conversations and of the written summaries in the workshop handbooks. A written summary of the previous day's discussions developed by Barbara Murdock, a contractor to FHWA, was disseminated to workshop participants. (That summary is included as Appendix D, page 72.)

Following the plan developed by the Workshop Planning Committee, individuals were assigned the task of listening to remarks on the first day of the workshop, paying special attention to research implications. The following individuals made presentations to the workshop participants to initiate research problem statement development:

- Strategic Planning-Driven Initiatives—Yvette Irving, Strategic Planning Manager, Virginia DOT
- Workforce and Reorganization-Driven Initiatives—George T. Lathrop, Deputy Director, Department of Transportation, City of Charlotte, North Carolina
- Process and Program Delivery-Driven Initiatives—William G. Stringfellow, Senior Transportation Planner, TranSystems Corp.
- Cross-Cutting Initiatives—Lance A. Neumann, President, Cambridge Systematics, Inc.

Following these presentations, an opportunity was provided for all participants to write the titles of proposed research statements on paper and fix them to larger sheets of paper pinned to the walls for each of the four categories. Organizers and participants then sorted and grouped the proposals, eliminating duplicates. The remaining candidate statements were provided to facilitators of the four breakout sessions for further work.

The sessions had the following facilitators:

- Strategic Planning-Driven Research—Theodore H. Poister, Professor, Department of Public Administration and Urban Studies, Georgia State University
- Workforce and Reorganization-Driven Research—Barbara Martin, Chief, Organizational Development Bureau, Montana DOT
- Process and Program Delivery-Driven Research—David S. Ekern, Assistant Commissioner, MnDOT
- Cross-Cutting Initiatives—Daniel L. Dornan, Vice President, Infrastructure Management Group, Inc.

PC terminals were provided in each of the breakout sessions for participants to use to draft research problem statements. A template for developing the research statement, based upon NCHRP project requirements, was provided on diskettes for each group's use. A centralized printer was available for printing copies of the problem statements.

Each facilitator reviewed the problem statement ideas and assisted the group to reach a consensus on the top priorities for detailed problem statements. Individuals and groups then developed the priority statements.

Following research problem statement development, diskettes and printed copies of the statements were collected and used in the documentation included in this circular.

Workshop participants reconvened to review the research problem statements developed in the smaller group sessions. Because of the technology that was provided, a listing of the problem statements was prepared by the end of the second day of the workshop and reviewed at the mid-year TRB meeting the next week.

CIRCULAR DEVELOPMENT

Following the workshop, members of the TRB Committee on Strategic Management prepared this research circular. The primary author was Cinde Weatherby Gilliland.

Problem statements were refined and circulated to individual authors for review. An executive summary of the workshop and the resulting research agenda was developed by FHWA as a stand-alone document and is included as Appendix E (page 76).

INTEREST IN FURTHERING THE RESEARCH AGENDA

During the workshop some CEOs of state DOTs and a number of other officials informally discussed the need to quickly initiate research ideas from the workshop. Even as the workshop is being documented, there is an effort underway to utilize NCHRP funds for research projects, to be chosen from the candidate problem statements in this circular, as prioritized by a panel of state CEOs. The overwhelming response to the workshop and other efforts underway is gratifying to the TRB Strategic Management Committee and the others involved in sponsorship.

Strategic Planning-Driven Initiatives

Public Connection, Priority-Setting Process, and Performance Measurement

OVERVIEW

Much like the private sector, state departments of transportation are embracing strategic planning as a means of dealing with their changing environment. This environment includes increased focus on connecting to the public, the DOTs' customers. Priority setting and performance measurement are also key components in the strategic planning initiatives.

According to recent surveys, most state DOTs have developed a formal agency mission statement to which strategic actions are consistently aligned. More than half of the departments translate their mission into a range of priority activities that further strategic actions, together with a measurement system to track agency progress in fulfilling the mission.

The departments have introduced strategic planning elements with a wide range of objectives and in varying sequence. Often the initiatives have been required by state administration reinvention activities.

In the past, the focus of state DOT planning efforts has been internal, but recent emphasis on improving relationships with customers and other stakeholders has broadened the activity to include external input. The definition of external stakeholders has evolved to include users, interest groups, other levels of government, vendors, and taxpayers.

State DOTs have reported three principal categories of impacts from strategic planning:

- A sharpened customer focus through the interactive process of obtaining customer and stakeholder perspectives;
- A refined set of priorities, used as a guide to align and coordinate other strategic activities; and
- A clearer, better-shared understanding of organizational values and priorities on the part of both staff and customers.

Generally, state DOTs appear to have embraced strategic planning, but they have minimal-to-moderate experience in applying it. State DOT executives see the benefit of incorporating strategic planning into the culture of their organizations and wish to learn more about the successful and unsuccessful experiences of their peers.

At the CEO Workshop on Managing Change in State Departments of Transportation, the DOT executives shared their experiences in strategic planning both orally in sessions and in two-page written summaries. Twenty-two states presented written summaries of their strategic planning experiences. These summaries are included in Appendix C.

The written summaries of state DOT experiences identified the following:

- Key challenges—major obstacles faced in undertaking strategic planning initiatives;
- Activities—steps taken for the initiatives, and results to date;
- Lessons learned—what worked and what didn't; and
- Research needs—the most important items for future strategic planning efforts.

KEY CHALLENGES

Implementation of state DOT strategic planning efforts faces some hurdles, as noted by the contributing state DOTs. Challenging preconditions and obstacles listed by the DOTs include the following:

- Employees at all levels must understand and “buy into” the strategic planning effort;
- Measurements must be incorporated and feedback loops established;
- Data for measurements must be readily available and easily understood;
- Senior management must fully support the effort and provide leadership;
- Processes used should be simple and streamlined and focused on customer outcomes;
- All modes of transportation should be considered;
- There should be a diversity of participants—both internal and external—and there are widely varying levels of understanding of the planning, programming, and financing processes among them.
- It is difficult to overcome the reluctance of managers to change;
- In large agencies it is difficult to ensure that all divisions are consistent with each other's, and the agency's, vision;
- The strategic agenda must be linked to annual business plans; and
- With daily responsibilities, it is difficult to maintain focus on the strategic effort.

CURRENT ACTIVITIES

Most of the examples offered by the state DOTs include the definition of mission and objectives. There is also an emphasis on understanding the customers of DOT services, identifying stakeholders, and establishing internal and external communications programs. One of the more difficult elements of the strategic planning processes has been selecting of performance measures.

Examples of activities underway as part of state DOT strategic planning processes include the following:

- Employee surveys, focus groups, workshops, and team-building exercises;
- Internal communications seminars and other initiatives;
- Senior management retreats;
- Customer survey programs;
- Establishment of “customer convenience” policies;
- Development of performance measures, including testing of pilot or preliminary measurements;

- Establishment of baseline conditions and reporting mechanisms;
- Listing of service lines and products;
- Quarterly division progress report sessions;
- Research on other public and private initiatives;
- Use of external facilitators;
- Establishment of champions and leaders for the strategic planning process; and
- Review and refinement of strategic planning processes used.

LESSONS LEARNED

State DOTs learn from their own experiences and those of other states. Among the lessons learned from experiences shared by state DOT executives at the CEO workshop are the following:

- Strategic planning processes should be as simple, synchronized, and stable as possible and include both top-down and bottom-up involvement.
 - Strategic planning and budget cycles should be better coordinated.
 - Performance measures are always evolving.
 - Teamwork should be improved at the executive and senior management level.
 - Training in the concepts of outcomes and accountability can help.
 - Focus must be maintained on outcomes and not on process.
 - Feedback loops help maintain the energy to make the planning work and reinvigorate it as each new cycle begins.
- Melding individual performance evaluations to divisional performance goals can be motivating.
 - It takes time to reach consensus—be sure to allow enough time in the planning schedule to deal with it.
 - Neutral facilitation of the process can be invaluable.
 - Don't hold out for perfection—use available data for measurements.
 - Demonstrate that change is beneficial—make small changes that will produce obvious benefits in a reasonable amount of time.
 - Executives must be enthusiastic and demonstrate leadership.
 - Each employee must clearly understand his or her role and individual performance plan that is aligned with the agency business plan.
 - Make sure that measurements adopted will actually measure progress.
 - Involve all levels of employees.
 - There is never enough communication—internally and externally.
 - Acceptance can be greatly enhanced by a user-friendly performance-measurement reporting system.

RESEARCH NEEDS

The research needs statements were drafted at the workshop in a process developed by the TRB Strategic Management Committee.

Yvette Irving, Strategic Planning Manager for the Virginia Department of Transportation, began the process by presenting a synopsis of the strategic-planning-oriented research needs identified in the CEO discussions during the first day of the workshop.

Following a general brainstorming session on the topics, groups were formed to develop specific problem statements. Theodore H. Poister, Professor of Public Administration and Urban Studies at Georgia State University, facilitated the strategic planning-driven initiatives group discussions. Individuals involved in drafting the problem statements were:

- Paul Adams, Deputy Director, Oklahoma DOT
- Blaise Carriere, Deputy Secretary, Louisiana Department of Transportation and Development
- Jennifer Finch, Director, Division of Transportation Development, Colorado DOT
- John Frankenhoff, Research Coordinator, District of Columbia Department of Public Works
- David Huft, Research Engineer, South Dakota DOT
- Yvette Irving, Strategic Planning Manager, Virginia DOT
- Robert Johns, Deputy Director, Center for Transportation Studies, University of Minnesota
- Kam Movassaghi, Secretary, Louisiana Department of Transportation and Development
- Connie Sorrell, Assistant Commissioner for Administration, Virginia DOT
- Kathleen Stein, Principal, Howard/Stein-Hudson Associates
- Mike Ryan, Deputy Secretary for Highway Administration, Pennsylvania DOT
- Bob Ward, Director, Strategic Services, Minnesota DOT

The research problem statements that follow are the direct result of discussions during the workshop. They reflect the desire of the CEOs to know more about the strategic planning process, how public and private entities deal with elements of the process, and how other state DOTs approach these issues. Topping the research agenda is performance measurement. Linking strategic planning to resource and implementation decisions is also of great interest. Several of the research topics deal with the expanded role that state DOTs find themselves playing in identifying customers, obtaining information from customers, and developing programs for two-way communications and interaction.

Strategic Planning-Driven Research Needs Statements

A-1. BEST PRACTICES IN PERFORMANCE MEASUREMENT FOR STRATEGIC MANAGEMENT

Description of Research Problem

State DOTs traditionally have used a variety of performance measures to track performance at various levels. Many of these measures have focused on monitoring operations or tracking the performance of programs in specific service areas. Further, many of these measurement systems have focused on output and efficiency more than outcomes and real results. While these systems are often useful to managers at the operating and program levels, they tend to be less responsive to the information needs of executive teams concerned with strategic issues.

However, with the recognition of the importance of strategic planning and ongoing strategic management, there is a real need for specifically targeted, yet global, measures of performance at the strategic level. Some leading state (and local) DOTs are experimenting with such systems to support their strategic management processes. Approaches have included the “family of measures,” balanced scorecard applications, “dashboards,” and other kinds of key results measurements to track critical indicators of progress in strategic goals and objectives. Other states are becoming interested in these approaches or are just beginning to develop performance measurement systems to support their strategic management processes. Therefore, there is a real need to identify and document best practices in the design, implementation, and use of submeasurement systems.

Some states are currently involved or soon will be, in developing or updating strategic plans and developing related performance measures under legislative mandates. The results of the proposed best-practice research can provide invaluable assistance for these efforts. Further, having widespread strategic performance measures in place at the state level could be invaluable in supporting AASHTO’s efforts on reauthorization. The research could also be beneficial to local governmental units, transit agencies, and other transportation organizations.

NCHRP Synthesis 238 addresses performance measurement in state DOTs, but it focuses for the most part on measures at the operational and program levels. In this fast-evolving field, much of the early development of strategic-level performance measurement systems in DOTs has occurred since 1997 when this report was published. The AASHTO report, *The Changing State DOT*, includes the strategic management context in DOTs but does not address performance measurement at this level in any depth.

Proposed Research

The objective of this research is to document the current practice of performance measurement at the strategic level within DOTs. The product will be a synthesis of best practices that can be adapted by other DOTs as they create or modify their own measurement systems.

Research should include the following three principal tasks:

1. Identifying leading-edge departments in this area through a quick, informal reputation scan (through debriefing of individuals knowledgeable about these initiatives), in addition to a brief, fast turn-around, mail survey.
2. Obtaining information from these departments on their strategic-level measurement systems through a combination of extensive phone interviews, review of relevant documents, and site visits to a few selected DOTs. This information will include the kinds of measures used and their linkages to strategic plans, issues regarding data availability, frequency of reporting, and how the performance data are utilized in managing the organization and reporting to external stakeholders.
3. Preparing a concise, straightforward synthesis that will make the findings of this research readily accessible to DOTs. This report will focus principally on the purpose(s) of strategic-level performance measurement systems, the dimensions of performance being monitored and types of measures employed, the internal and external audiences to whom the information is targeted, and a description of the manner in which the performance data are being utilized to improve overall DOT effectiveness.

Cost

\$60,000

Duration

6 months

A-2. OBTAINING CUSTOMER INPUT ON NEEDS AND SATISFACTION

Description of Research Problem

DOTs have expressed a critical need for doing quick research on overall practices in customer surveying and other feedback techniques. They have identified two important aspects of customer information: (1) user satisfaction with current services and products and (2) customers' opinions about most important services that the DOT should be providing. This information can be used to assess and improve performance and marketing effectiveness. CEOs have highlighted their need for information on user satisfaction to identify strategic priorities, communicate with legislators and citizens, and target programs and funds to meet critical needs. Agencies see customer feedback as an important resource in evaluating performance at all levels of the organization. A tool kit of best practices and techniques will assist agency leaders and staff in designing and implementing successful customer outreach.

Proposed Research

A synthesis will be prepared of all state DOT practices for obtaining customer input and feedback and developing a tool kit of effective customer research initiatives. Both Phase I

and Phase II research, outlined below, should be in keeping with the anticipated project, NCHRP 20-53, "How State DOTs and Other Transportation Agencies Need to Respond to Changing Customer Needs."

Phase I: Quick Response Tasks (6 months)

Conduct an inventory of current best practices in customer feedback and the ways DOTs use such feedback. The tasks are:

1. Update previous research on DOT customer feedback practices and techniques [such as NCHRP 20-24(10) "Customer Based Quality in Transportation,"] to cover all of the techniques currently in use. These include: surveys, interviews, focus groups, customer "juries" and panels, advisory committees, internet and website applications, kiosks, response cards, and any other practices that have come to light.
2. Identify the ways in which DOTs are currently using customer feedback.

Phase II: In-Depth Research Tasks (12 months)

Develop best-practices assessment and tool kit, as follows:

1. Categorize the characteristics of customer-response techniques that are significant to DOTs, such as the types of information to be obtained; how the information will be used; the level of detail; statistical reliability; market segmentation; cost; technology used; and level of expertise required to use the technique.
2. Develop criteria to measure "best practices," including, for instance, the flexibility and cost effectiveness of techniques, the value and timeliness of information derived, and the extent to which staff at many levels of the DOT can use the information in assessing and improving performance and making decisions.
3. Develop a tool kit for practitioners, categorized with regard to (a) purposes for gathering the customer feedback data; (b) different users within DOTs, from CEOs to line staff, and (c) different management needs, such as decision making, strategic planning, performance reviews, budgeting, marketing and communications. The tool kit will include both customer feedback techniques and recommendations on steps and resources needed to implement them. The tool kit will also include guidance on how to use the feedback to improve agency performance.

Cost

Phase I: \$50,000

Phase II: \$150,000

Duration

Phase I: 6 months

Phase II: 12 months

A-3. BUILDING STRONG LEGISLATIVE SUPPORT FOR STRATEGIC TRANSPORTATION AGENDAS

Description of Research Problem

Since legislative bodies often develop and approve transportation funding and implementation strategies, they are critical to the success of DOT strategic priorities. The federal surface transportation program (currently under the Transportation Equity Act for the 21st Century—TEA-21) provides a framework for state transportation programs. State legislative processes and committee structures vary, yet all state DOTs face the following challenges:

- Creating and maintaining legislative buy-in;
- Dealing with legislators that have local objectives;
- Providing valuable measures of effectiveness to legislators;
- Determining techniques most effective for positioning legislative budget and funding proposals;
- Determining the relative priority of transportation among other state initiatives; and
- Researching best practices for interaction with the legislative bodies.

Three key areas of focus for the DOT—state legislature interaction are (1) programmatic content; (2) the schedule or timeframe for completion of the program or program elements; and (3) obtaining the necessary funding to accomplish priorities.

State departments of transportation must focus on increasing the involvement of state legislators to engender support for strategic transportation priorities, with the ultimate goal of generating effective legislation for funding short- and long-term transportation programs.

Proposed Research

This research project would include the following tasks:

- Identifying current practices and approaches to involve legislators—Researchers should contact state legislative sources, including state DOT legislative coordinators, to obtain generalized information on development and enacting of legislation.
- Developing a list of best practices—A survey should be conducted of other state agencies, such as education and healthcare departments and other advocacy groups, on processes for legislative interaction and performance measures for quantifying success of the programs used.
- Identifying appropriate methods for state DOT education and training—Researchers should make recommendations on the most effective methods to be used by state DOTs for interaction with legislatures and positioning transportation priorities.
- Identifying examples of successful outcomes, including funding and implementation programs, from DOT-state legislature interaction. Researchers should also include an analysis of the key factors affecting the successes.

Cost

\$150,000

Duration

12 months

A-4. EFFECTIVELY MARKETING TRANSPORTATION DEPARTMENT PRODUCTS AND SERVICES**Description of Research Problem**

The general public and specific customer groups rely heavily on transportation. Because mobility and safety are essential to economic vitality and personal well being, legislators and other stakeholders are keenly interested in whether the products and services that transportation departments deliver meet customer needs, as well as in the quality of service delivery.

The ability to respond to customer needs depends upon perceived and expressed public support, but transportation departments have traditionally been ineffective in communicating and marketing current initiatives and their future vision. As a result, public confidence in transportation decisions has declined. As a secondary result, political support in legislative and executive branches has also decreased.

Transportation agencies face a critical challenge of winning public trust. If they are to successfully fulfill their mission, they must have tools for marketing products and services and sustaining public and political support.

Successful marketing requires identifying customers, pinpointing their needs, developing products and services, allocating resources and effort, and communicating plans and progress to public. To effectively address customers' needs, transportation departments must:

- Provide information needed by customers to best use available products and services;
- Develop awareness and support for initiatives that will meet customers' needs;
- Demonstrate accountability for public funds to prove the amount of customer value created;
- Inform the public of resource needs and the value of current and proposed investments; and
- Demonstrate decisions based on market research.

Although consumer-driven private enterprise and, to a lesser extent, public agencies have developed effective marketing methods, these methods have not been widely applied in transportation departments. Research is needed to evaluate best marketing practices and to recommend techniques that can be used effectively by DOTs.

This project should be coordinated with, or take into account, Project 20-53, "How State DOTs and Other Transportation Agencies Need to Respond to Changing

Customer Needs,” which will be initiated in NCHRP’s FY2001 program. Two other projects recommended at the CEO Workshop on Change Management in State DOTs, “Obtaining Customer Feedback and Suggestions” and “Linking Strategic Planning to Resource and Implementation Decisions,” are also related.

Proposed Research

The objectives of this research are to:

1. Survey marketing techniques from consumer-driven businesses in the public and private sector;
2. Identify and describe important marketing concepts that DOTs need to understand and adopt;
3. Develop recommendations on how transportation departments can interpret customer data and make responsive business decisions;
4. Recommend best practices for marketing and outreach to the public and distinctly identified customer groups;
5. Recommend organizational structures that support sustained, effective marketing; and
6. Cite case studies that illustrate marketing techniques in transportation agencies.

Cost

\$50,000

Duration

6 months

A-5. LINKING STRATEGIC PLANNING TO RESOURCE AND IMPLEMENTATION DECISIONS

Description of Research Problem

Many DOTs have begun strategic planning efforts. Strategic plans have been developed that include missions, visions, goals, and objectives. There have been challenges, however, in linking these plans to the actual decisions that are made by DOT leaders. Functions that have existed for several years often have their own set of objectives, not necessarily related to the strategic planning process. The strategic planning function itself may have begun in isolation, with little consideration given to its integration with other functions. In addition, new developments may occur that make the strategic plan obsolete.

Conceptually, there is general understanding that strategic planning should be adaptable to changing conditions, both internally and externally. It should also be closely linked to customer input, both top-down and bottom-up, and should be used to redirect resources to the strategic priorities of the department. There have been major challenges in making concepts a reality.

The decisions that a strategic plan should influence include, but are not necessarily limited to, those related to

- Budgets
- Annual business plans
- Performance measures
- Organizational structures
- Workforce allocations
- Use of consultants and other external providers
- Statewide transportation plans
- Capital improvement plans
- Infrastructure maintenance plans
- Safety strategies
- Equipment and technology investments
- Facilities

There is a need to develop new approaches that link strategic planning to decisions in all these areas so that the strategic plan is, in fact, implemented.

Proposed Research

This research will include three phases, consisting of a survey, development of case studies, and research and development of new models and guidelines. Specifically the research will include:

Phase I: Survey of State DOTs and Other Organizations

The researchers will survey both public and private organizations to identify current practices in linking strategic plans to management decisions. Organizations with the most promising success stories will be selected for more-detailed analysis.

Phase II: Detailed Case Studies

The researchers will develop five or six case studies with data from those organizations most advanced in linking their strategic plans to implementation decisions. Based on interviews with managers and review of documents, the case studies will identify common features of successful strategic planning processes and will describe how these organizations overcame obstacles to linking the plans to implementations.

Phase III: Researching and Developing New Models and Guidelines

The researchers will utilize the information from Phase II to choose the best set of practices from the case study organizations. They will also survey the latest academic research on strategic planning and the state of practice in private-sector organizations. From this data, they will develop a set of guidelines for state DOTs that describe how strategic plans can best be linked to resource and implementation decisions.

Cost

Phase I: \$40,000

Phase II: \$50,000

Phase III: \$100,000

Duration

Phase I: 6 months

Phase II: 9 months

Phase III: 12 months

Workforce- and Reorganization-Driven Initiatives

Focus on Internal Results, Organizational Reconfiguration, and Staff Recruitment and Retention

OVERVIEW

Workforce and organizational issues are a major focus of many of the state departments of transportation today. Reductions in force, as a result of both policy initiatives and retirement, have been common experiences in a majority of the states. The average reduction in full-time employees among all state DOTs is estimated at 5.3 percent over the past decade.

The primary issues identified in recent research include the following:

- Recruitment and Retention
- Right-Sizing the Workforce
- Flexibility in Workforce Practices
- Succession Planning
- Performance Incentives and Measures

Departments are reporting “managed downsizing” and a flattening of their organizations, often eliminating some middle management functions and emphasizing positions needed for interaction with the public.

In a recent survey, at least half the states report decentralization of project development functions to district offices. These functions often include procurement, planning, environmental design and construction, and activities involving direct customer contact. At least 15 states have centralized support functions such as information management, finance, human resources, and quality assurance.

Most states also report a loss of important staff capability and corporate memory as a result of either retirement or the more attractive private sector compensation. Increased outsourcing has offset some of these losses, but this has created a need to identify core competencies that must be maintained in-house. More than half the states are increasing the level of staff development activities, ranging from informal quality initiatives to formal training academies.

New and evolving technology requirements also challenge the state DOTs. The stiff competition with the private sector for qualified employees in these fields has demanded specialized efforts to recruit and retain technical staff.

States are dealing with workforce issues in strategic plans. Twelve states have implemented formal staffing plans, and 10 of these have integrated their staffing plan with their strategic plan.

At the CEO Workshop on Managing Change in State Departments of Transportation, the DOT executives shared their experiences in workforce and reorganization issues and activities, both in the sessions and in two-page written summaries. Eighteen states presented written summaries of their workforce and reorganization experiences. These summaries are included in Appendix C.

The written summaries of state DOT experiences identified the following:

- Key challenges—major obstacles faced in undertaking workforce or reorganization initiatives;
- Activities—steps taken for the initiatives, and results to date;
- Lessons learned—what worked and what didn't; and
- Research needs—the research subjects that would be most useful to future strategic planning efforts.

KEY CHALLENGES

Workforce and reorganization issues present some key challenges, as noted by the contributing state DOTs. Among the major challenges and problems listed are the following:

- Competition for employees as a result of strong economic growth;
- Increased demands on the workforce fostered by increased federal funding for transportation;
- Increased retirement of the workforce initially developed for the Interstate highway era, creating shortages in some skill areas;
- Workforces with very little experience;
- Increased demands for training to deal with technical advances;
- Demands for better internal communications programs;
- Finding creative means to compete with the private sector for employees;
- Developing processes for quicker hiring;
- Designing processes that disseminate decision-making in the organizations down to the lowest levels;
- Helping technical employees deal with management of external contracts and public interaction;
- Linking employee contributions to strategic objectives;
- Dealing with a shortage of graduating civil engineers and information technologists;
- Confronting employee dissatisfaction;
- Developing programs that encourage employee acceptance of change;
- Adopting project management tools and techniques as a way to improve project performance; and
- Forecasting staffing requirements.

CURRENT ACTIVITIES

Most of the examples offered by the state DOTs deal with the issue of recruitment and retention. While developing new and creative means to acquire staff, the departments are also developing programs to “grow their own” and encouraging succession planning throughout their organizations.

Examples of activities underway in state DOTs to address workforce and reorganization issues include the following:

- Establishing hiring centers in major metropolitan areas;
- Forming teams of recruiters to travel across the country to reach out-of-state graduates;

- Developing training evaluations for each employee to identify job-specific skill deficiencies and develop individual training plans;
- Increasing communications with employees through interviews, surveys, focus groups, and use of a morale index;
- Partnering with temporary employment agencies to train and develop future permanent employees;
- Initiating contact with area schools to generate interest in transportation careers;
- Developing new compensation programs, including approaches such as expanded career ladders and competitive pay for engineers and dual track career ladders to reward both management and technical skills;
- Providing incentive programs (“signing bonuses”) for new employees or employees successful in recruiting new employees;
- Using the Internet for recruitment, including on-line applications and self-rating exams;
- Establishing cross-functional teams to solve problems, make decisions, and implement new programs;
- Developing performance appraisal systems to identify core competencies, both task and behavioral;
- Instituting intern programs;
- Designing pay programs to recognize long-time employees, so as to lessen the gap with the higher salaries required to attract new employees;
- Responding to employee demands for more flexibility in work schedules;
- Looking for non-traditional methods to demonstrate concern for employees, such as uniforms for maintenance workers, reimbursement for safety apparel, and polo shirts with state DOT logos to reward achievement;
- Refreshing or renovating employee work space regularly;
- Developing recognition programs and wellness programs for employees;
- Implementing studies to determine positions needed and skill sets required;
- Amending hiring processes to shorten the time required to complete them, including streamlining civil service processes;
- Establishing succession plans for key positions throughout the agency;
- Decentralizing hiring authority to district and division administrators; and
- Defining project management roles and responsibilities and institutionalizing project management practices.

LESSONS LEARNED

State DOTs learn from their own experiences and those of other states. Among the collective lessons they learned from sharing experiences at the CEO workshop are those listed below.

- Cross-functional organizations are better suited for meeting department goals;
- Workforce forecasting tools can be highly involved and complex;
- Competitive salaries are required to compete with the private sector for employees;

- Decentralization of hiring authority provides for compatibility of responsibility and authority and saves paperwork and time;
- Reorganization should be monitored, with changes made as needed;
- Project management systems can create ownership and result in less slippage in both schedules and budgets;
- Addressing and closing human resource gaps often cannot be accomplished without sweeping statutory or regulatory changes, but there can be incremental improvements;
- Surveys and research have revealed a significant need for entry-level supervisory training;
- Inexperienced mid-level management requires more intervention of senior level management than should be necessary;
- Human resource processing time can be significantly reduced through process modifications and reallocation of duties;
- Pay exceptions for engineers and information technologists can result in poor morale for others in the agency;
- Leadership and “change agents” are required for implementing organizational change;
- Incorporating individual competencies into the ongoing performance management process, and holding supervisors and managers accountable for providing regular feedback to their staff, can keep an organization focused on its goals;
- Multiskilled employees enhance the workforce, yet strong technical skills are also required;
- Ongoing communication and feedback contributes to the success of any organizational transition;
- Communications experts have been put on some staffs and used successfully to address ongoing communications needs;
- Urban hiring centers have worked well in attracting employees and processing them in a timely manner;
- Focused training evaluations have been invaluable in determining and prioritizing training needs;
- Standardizing computers and software has aided internal communication and enabled work to be processed more efficiently;
- Hiring processes can be affected by the timing of the budgetary process and efforts should be made to synchronize the two; and
- Without reliable measurements of the effectiveness of training, it is difficult to know the success of training efforts.

RESEARCH NEEDS

The research needs statements were drafted at the workshop in a process developed by the TRB Strategic Management Committee.

George T. Lathrop, Deputy Director of the Department of Transportation for the City of Charlotte, North Carolina, began the process by presenting a synopsis of the workforce—and reorganization—oriented research needs identified in the CEO discussions during the first day of the workshop.

Following a general brainstorming session on the topics, groups were formed to develop specific problem statements. Barbara Martin, Director of the Organizational Development Bureau of the Montana DOT, facilitated the workforce- and reorganization-driven initiatives group discussions. Individuals involved in drafting the problem statements were:

- George T. Lathrop, Deputy Director, Department of Transportation, City of Charlotte, North Carolina
- Barbara Martin, Director, Organizational Development Bureau, Montana DOT
- Delbert McOmie, Chief Engineer, Wyoming DOT
- Leon Schochenmaier, Director of Planning and Engineering, South Dakota DOT
- Richard Stewart, Deputy Director of Executive Support, South Carolina DOT

The research problem statements that follow are the direct result of discussions during the workshop. They reflect the desire of the CEOs to know more about how to deal with the key workforce issues that they face each day. Given the initiatives already underway in a number of states, they want to learn how other state DOTs approach these issues, as well as to learn from the experiences of any private or other public agencies. The research priority needs identified include the issues of succession planning, dealing with new technology and information demands; and employee professional development. The CEOs also placed a priority on research for identifying the core competencies needed by a DOT of today and in the immediate future and for learning the best practices for recruiting and retaining a workforce with those competencies.

Workforce- and Reorganization-Driven Research Needs Statements

B-1. EFFECTIVE PRACTICES IN EMPLOYEE SUCCESSION PLANNING

Description of Research Problem

Well-qualified and competent personnel in supervisory, technical, and management positions are critical to effective transportation organizations. Effective succession practices are needed to deal with crises resulting from imminent retirements in several agencies, but also can improve the effectiveness of successor determination throughout transportation agencies in general.

DOTs generally have followed a practice of hierarchical succession for supervisory, management and other leadership positions: the next "ranking" person, whether "rank" is determined by position or longevity or some other criterion, is assumed to move up when a vacancy occurs in a position next up the ladder. In a minor variation, selection may be made from among several immediate subordinates, but with little consideration of alternatives.

This typical procedure may not result in continuity of effective job performance for several reasons:

- Little attention may have been paid to developing the needed skills and knowledge in the assumed successor(s);
- The gap in experience, skills or training may be so great that the next person(s) on the ladder may not be qualified; or
- The next person(s) may not have the qualities needed to move from a "second" seat to a management or leadership role.

The problem of selecting effective successors has become worse because of the large number of retirements and the gaps in training, skills, and experience resulting from past hiring freezes or reductions in force.

Proposed Research

The research should provide guidance regarding best practice in the public and private sectors for succession planning and implementation. Information should be supplied covering, at least, alternative strategies, processes and time frames and their positive and negative impacts, effectiveness, cost and organizational impact. Alternatives that are well suited to particular circumstances or types of positions should be identified. Research should identify, where applicable, how civil service system constraints factor into approaches or practices described.

Cost

\$50,000

Duration

12 months

B-2. IMPACTS OF TECHNOLOGY AND INFORMATION NEEDS FOR CHANGES OF MISSION

Description of Research Problem

Many state transportation agencies are facing significant changes in, or additions to, their mission and responsibilities, often requiring development of new information and technology systems. Unforeseen investments of time and resources for developing capabilities to meet these requirements can have serious consequences. For example, a change in mission that implements managed competition requires unit cost data for the agency's in-house work that frequently is not available and the development of new information systems to track this data.

These requirements add to the increased use of information technology (IT) in traditional functions, creating organizational challenges. Decisions have to be made about whether to increase IT staff for expensive system development or outsource it and about how to recruit or develop employees with IT skills, where to place organizational responsibility for IT leadership, and budget allocations for work that often has had significant cost overruns. There is a desire on the part of state DOTs to learn of examples of successful management of IT changes required for adapting to new directions.

Proposed Research

This research should review changes in mission and responsibilities that have recently occurred or are underway and should analyze information and technology needs for supporting new initiatives. Researchers should identify the organizational impacts of implementing these technology and information needs, including budget, personnel, and organizational structure implications. The researchers should also develop from four to six case studies on ways that organizations have successfully planned for and managed these impacts and evaluate and document best practices.

Cost

\$100,000

Duration

12 months

B-3. BEST PRACTICES IN EMPLOYEE DEVELOPMENT

Description of Research Problem

State departments of transportation are experiencing unprecedented change. Facing both increased pressure to reduce the size of state government and the expanding services that DOTs are expected to deliver, the states are finding it necessary to outsource much work that was formerly done in-house. This trend has resulted in many of the staff having to assume new roles; for example, many have become project managers rather than

designers. There is a critical need for guidelines, programs, procedures, and overall philosophies for training staff for the roles they are being required to fill. This would apply to staff members already on board as well as those to be hired. There is also a need for information on how an agency might plan for workforce development. A DOT must anticipate development needs to meet its current and future demands.

Proposed Research

To address these problems, the researcher would carry out the following tasks:

- Survey the state DOTs, the Federal Highway Administration (FHWA), and other organizations, including those in private industry, to identify changes and find out how staff were trained for their new roles.
- Review the literature for guidelines and recommendations on training staff for changing roles.
- Summarize the findings from these first two tasks and recommend strategies to prepare staff for new roles. Research should also address how a DOT should anticipate (plan for) workforce development in a changing environment.

It is expected that the results of this effort will assist DOTs in preparing their workers for the new roles that they will be called upon to fill.

Cost

\$100,000

Duration

12 months

B-4. BEST PRACTICES IN RECRUITMENT AND RETENTION

Description of Research Problem

Many states are experiencing difficulty in hiring and retaining technical personnel. Recent changes in the marketplace have substantially increased the competition for information technology (IT) specialists, engineers, technicians, and related professions. In addition, some states are experiencing difficulty in hiring and retaining nontechnical personnel.

Proposed Research

Researchers should define strategies in both public and private sectors that can lead to successful methods to recruit and retain employees. To accomplish this they should:

- Research each DOT's efforts to recruit and retain staff;
- Review the literature for best practice examples, including the "Staffing Plan Survey of State Transportation Agencies," completed by the New Mexico State Highway and Transportation Department;

- Assemble examples of other public sector initiatives in this area; and
- Provide a description of private sector efforts that may be applicable to public entities.

The intent of this research is to assemble information that has already been published in both the public and private sectors and to synthesize the information for possible use in departments of transportation. Where possible, researchers should identify the impact of civil service systems on recruitment and retention.

Cost

\$60,000

Duration

6 months

B-5. IDENTIFYING CORE STAFF COMPETENCIES FOR 21st CENTURY DOTs**Description of Research Problem**

A shortage of skilled employees has forced DOTs to look at better ways to use limited employee resources. Changes in technology requires the DOTs to take a hard look at what skills are essential to make them efficient and effective organizations in the face of constant change.

Proposed Research

The research would determine:

- What the core competencies are in various DOTs, and whether there are any common threads.
- How these competencies were identified by the DOTs and by other public and private organizations.
- The best practices that organizations have used to identify these competencies.
- Tools used to scan the environment for competency needs likely to emerge.

The study would provide a process that DOTs can use to identify competencies they need, or will need, to keep apace of change.

Cost

\$60,000

Duration

6 months

Process- and Program Delivery-Driven Initiatives

Process Reengineering and Program Delivery Modifications

OVERVIEW

In the United States, changes in the roles, organization, and processes of surface transportation institutions may be less dramatic than on the international level, where some countries have adopted private sector models; however, there is significant change taking place.

Recent surveys have shown that widespread state DOT initiatives are underway to improve program delivery through quality initiatives, innovative contracting, and outsourcing of services. There are also fundamental changes occurring in management approaches and organizational structures that emphasize project development.

To a certain extent, reengineering of processes and program delivery is the result of the changing environment mentioned in the previous two initiatives, called for by strategic goal setting and the need to respond more directly to the “customer”, as well as by the challenges presented by the current work force. Organizations are changing the way they operate their own businesses, and they are also partnering more with other entities.

In general, state DOTs are involved in the following process or program delivery activities:

- Quality management initiatives;
- Business process reengineering;
- Innovative contracting;
- Outsourcing;
- Privatization;
- Product evaluation; and
- Increased research and development efforts.

In many cases, different approaches are requiring statutory changes and new practices, such as in the design-build-operate model. As with strategic planning, few states have much experience with some of these issues and there is a strong desire to learn from the experiences of other state DOTs and other organizations whose experience is relevant.

At the CEO Workshop on Managing Change in State Departments of Transportation, the DOT executives shared their experiences in process and program delivery activities both in the sessions and in two-page written summaries. Twenty states presented written summaries of their process and program delivery experiences, included in Appendix C.

The written summaries of the state DOT experiences identified the following:

- Key challenges—major obstacles faced in undertaking process or program-delivery driven initiatives;

- Activities—steps taken for the initiatives, and results to date;
- Lessons learned—what worked and what didn't; and
- Research needs—the subjects that would be most useful to future process and program delivery activities.

KEY CHALLENGES

Implementation of state DOT process and program delivery initiatives faces some key challenges, as noted by the contributing state DOTs. Among the major challenges they listed are the following:

- Identifying meaningful performance measures, including baseline measures and achievable targets;
- Converting and consolidating multiple legacy databases into web-enabled data warehouses;
- Standardizing business processes;
- Working with partners (industry, local, regional, state and federal agencies) to develop shared visions;
- Handling substantial increases in projects and project funding with the same number of, or fewer, fulltime, staff members;
- Achieving “buy-in” from all employees for process changes;
- Achieving buy-in from industry for new, improved contracting and bidding practices;
- Developing scopes of work for performance contracts;
- Backing up scopes of work and deliverables with appropriate legal documents;
- Deciding which projects should be executed with alternative construction contracting procedures;
- Developing process and program delivery systems rigid enough to provide a framework for program development and performance measurement, yet flexible enough to permit a variety of approaches;
- Addressing the more-open processes required by ISTEA and TEA-21, including environmental and public involvement issues;
- Overcoming existing agency cultures; rather than deciding, announcing, and defending transportation decisions, engaging instead in constructive regional and metropolitan dialogues to craft solutions;
- Reducing the time it takes for project implementation;
- Deciding which services should be performed in-house or by consultants;
- Getting an accurate calculation of overhead costs for fair comparisons between in-house work and outsourcing;
- Determining when to use incentives in contracting and how much incentive to offer;
- Developing prioritization processes for project selection that have the support of all parties;
- Producing more accurate and consistent project estimates;
- Helping staff overcome a tendency to see problems as caused by someone else and beyond their control;

- Dealing with customers who expect high levels of service, but who do not want to be inconvenienced any longer than necessary, by developing partnerships and transportation alternatives during construction; and
- Developing trust between the agency and its partners (other state agencies, local and regional entities, and industry).

CURRENT ACTIVITIES

From the examples shared, there appears to be a major trend toward using project management teams and relying less on “stovepipe” organizations. Several states have instituted project manager positions, with the individual responsible for leading a team that shepherds the project throughout its life, from planning through construction. The project-related trends are a focus on streamlining processes and shortening the time required for implementing a project.

Examples of concerns about process and program delivery that are being addressed in the state DOTs, and of initiatives underway, include the following:

- Defining the scope, cost, and schedule of projects more accurately to minimize changes after programming;
- Employing corridor management techniques to provide coordinated project development strategies;
- Identifying critical activities to be performed earlier in the project development process;
 - Streamlining and improving the environmental and project approval processes;
 - Using “design sequencing” contracting to permit each construction phase to commence when design for that phase is complete;
 - Implementing constructability reviews of project plans and specifications by construction engineers during the design phase;
 - Partnering with industry to develop performance measures and partnering guidelines;
 - Piloting warranties for pavement surfacing;
 - Awarding most construction projects early in the fiscal year;
 - Developing projects under design-build contracts, where private firms provide design and construction services;
 - Increasing the use of contract incentive programs;
 - Contracting with private planning and engineering consulting firms to provide ongoing, task-ordered, support to district offices;
 - Using quality control and quality assurance contract specifications in both asphalt and aggregate work;
 - Using A + B bidding, lane rental, and other incentive-based contracting procedures;
 - Starting the environmental and right-of-way portions of development sooner and setting up multidisciplinary teams to identify other “road blocks” to project delivery as early as possible;
 - Instituting training in “context sensitive design” for staff and consulting engineer partners;
 - Developing workshops to heighten awareness of social and environmental issues;

- Fostering communications among project development, construction, and operations personnel to focus on design opportunities and corrective measures, with the goal of building projects designed to be maintained with fewer problems after construction;
- Using a peer review to fine tune the right-of-way acquisition process;
- Developing state-of-the-art computer systems, including engineering and construction management systems, expert systems to guide less-experienced employees through certain engineering processes, and electronic document management systems to allow storage, routing, and retrieval of project documents among all agencies (DOT and other state departments) involved; and
- Developing online processes for customer access to permitting and driver and vehicle services.

LESSONS LEARNED

State DOTs learn from their own experiences and those of other states. Some of the lessons learned from experiences shared among state DOT executives at the CEO workshop are listed below.

- Organization of staff around projects, rather than by discipline, has produced encouraging results, including lower project costs and faster project delivery.
- Partnerships with industry and other public entities have produced some early successes.
- Partnering with the private sector to provide more accessibility for buying DOT services and products (licenses, permits) has been very successful, but requires rigorous oversight.
- Adopting technology into everyday business allows a department to work smarter, faster, and deliver a higher-quality end product.
- Customers should be asked not only how a state transportation agency is performing, but also about their expectations from the agency.
- Communications is the biggest problem when making changes in organization or processes, and logistics of gathering groups together and the time required are big issues;
- Value engineering reviews of project designs can identify cost savings measures.
- Public relations can play a key role in the construction process.
- Don't promise what you can't deliver!
- Outsourcing works, but you need standards for work, whether it is done in-house or by a consultant.
- Any new initiatives must be continually reviewed by all involved parties and continually refined.
- Industry must be a partner in developing processes and performance standards.
- New processes have resulted in dramatic reductions in construction time.
- Working with transit providers to provide alternatives to the public during construction projects has been successful.
- Construction contract cash-incentive programs have been so successful that they are being offered more frequently.
- Choosing design-build teams using the "best value offer" encourages innovation and allows contractors to optimize workforces, equipment, and schedules.

- Project warranty program pilots have been successful and are being extended.
- There is a strong tendency to identify outputs, not outcomes, as performance measures.
- System administration costs should be considered when developing E-business programs.
- Clear goals and visions should be established before embarking on a change process.

RESEARCH NEEDS

The research needs statements were drafted at the workshop in a process developed by the TRB Strategic Management Committee.

William G. Stringfellow, Senior Transportation Planner with TranSystems Corp., started the process by presenting a synopsis of the process and program delivery-oriented research needs identified in the CEO discussions the first day of the workshop.

Following a general brainstorming session on the topics, groups were formed to develop specific problem statements. David S. Ekern, Assistant Commissioner of the Minnesota DOT, facilitated the process and program delivery-driven initiatives group discussions. Individuals involved in drafting the problem statements were:

- David S. Ekern, Assistant Commissioner, Minnesota DOT;
- Stephen C. Lockwood, Vice President, Parsons Brinckerhoff; and
- Robert E. Skinner, Jr., Executive Director, Transportation Research Board.

Research problem statements that follow are the direct result of discussions during the workshop. They reflect desire of the CEOs to know more about specific experiences with evolving and changed processes. This research agenda includes projects that investigate methods for working smarter internally and making frequent use of private services. It also reflects a desire of the state DOTs to examine successful relations and partnerships with other public entities.

Process- and Program Delivery-Driven Research Needs Statements

C-1. UTILIZING PRIVATE SECTOR RESOURCES

Description of Research Problem

There is a need for up-to-date information about ongoing efforts and techniques used by state DOTs to utilize the private sector in activities previously performed in-house.

Proposed Research

The scope of work for this scanning effort would include:

1. Examples of successful and unsuccessful outsourcing over the complete range of programs and project delivery activities.
2. Use of managed competition.
3. Metrics for determining benefits of outsourcing.
4. Issues associated with the construction industry regarding outsourcing.
5. Legal/administrative barriers.

Cost

\$50,000

Duration

6 months

C-2. INTERNAL REENGINEERING

Description of Research Problem

State DOTs express a need for current information about how other state DOTs have re-engineered internal processes to improve project management and accelerate project delivery. For example, some departments have reorganized staff around projects rather than traditional disciplinary divisions or departments.

Proposed Research

This scanning effort will include:

1. Characteristic descriptions of how state DOTs are organized to deliver projects.
2. Techniques to analyze program and project delivery activity systems for potential cost/time efficiency, including performance measurement.

3. Descriptions of best practice techniques covering a complete range of program and project delivery activities, such as design, right-of-way, construction, operations, and maintenance, including details about why the technique was successful or not.

Cost

\$50,000

Duration

6 months

C-3. STREAMLINING CONVENTIONAL PROCUREMENT METHODS

Description of Research Problem

There is a need for information about how state DOTs are streamlining conventional procurement methods to expedite their program and project delivery activities.

Proposed Research

The objective of this project is to gather information about the state of the practice and share techniques for reducing time and cost in the selection of vendors, consultants, and contractors for various program and project activities. The researchers will survey state DOTs about their experiences with:

1. Measures to streamline selection;
2. Legal and institutional barriers;
3. Model contracts; and
4. Creative uses of electronic bidding and the Internet.

Cost

\$50,000

Duration

6 months.

C-4. INNOVATIVE CONTRACTING

Description of Research Problem

State DOTs need information about how other state DOTs are employing innovative contracting methods to deliver better, more cost-effective service.

Proposed Research

This scanning effort will assess the state-of-the-practice (with examples) in innovative approaches to project delivery, including:

1. Various combinations of design, construction, maintenance, operations, and finance;
2. Incentives for time/cost savings and technical innovation, including use of incentives and disincentives;
3. Use of cost effectiveness and risk guarantees and warranties;
4. Dealing with legal and administrative barriers;
5. Approaches to maximizing equity and transparency in procurement;
6. Impacts on agency need for core capabilities; and
7. Use of performance measures.

Cost

\$50,000

Duration

6 months

C-5. COOPERATIVE RELATIONSHIPS**Description of Research Problem**

State DOTs need information about how other state DOTs utilize new approaches to program and project delivery that share costs and responsibilities between the DOTs and other public and private entities. DOTs would also benefit from understanding the barriers that exist to cooperative relationships and how they can be overcome.

Proposed Research

This scanning effort will include a review of the state of the practice regarding:

1. Public/ private partnerships between state DOTs and other state agencies or local governments for program delivery, involving cooperative techniques such as barter, responsibility reallocation, and cross-compensation (including environmental resource agencies).
2. Public/private partnerships between state DOTs and private entities for program delivery, including commercialization and privatization of public facilities and services (such as rest stops, toll roads, and ITS-related services).

Cost

\$50,000

Duration

6 months

C-6. CONVENTIONAL PARTNERING

Description of Research Problem

DOTs need information about how DOTs in other states are making use of partnering.

Proposed Research

Researchers will review the state of the practice with regard to applications of partnering in the complete range of owner/vendor relations, including:

1. Internal and external partnering.
2. Effectiveness in improving quality, reducing claims, and time/cost adherence.
3. Barriers to widespread adoption.

Researchers will describe the purpose of the partnering arrangements, details on successful and unsuccessful examples, and criteria employed in deciding when to partner. Materials and activities used for improving partnering should also be sought.

Cost

\$50,000

Duration

6 months

Cross-Cutting Initiatives

Partnering and Knowledge Sharing

OVERVIEW

The management issues at the top of the agenda for state DOT CEOs—strategic planning, workforce and reorganization, and process and program delivery—are all interrelated. For example, the goals set in strategic planning may necessitate changes in process, which in turn require changes in workforce skills and organization. There are some cross-cutting activities that seem to apply to more than one of these categories or that do not fit neatly in just one of the three.

External changes such as the new requirements for asset management and dramatic increases in fuel costs also prompt state DOTs to respond with internal changes, which may involve cross-cutting initiatives.

Among the cross-cutting initiatives discussed at the CEO Workshop on Managing Change in State Departments of Transportation were partnering with other transportation providers and with nontraditional organizations. Dealing with the change process itself, through developing processes and means to share experiences, was a priority topic. While there have long been research programs to support technical advancements in transportation, chief executives have come to realize that they also require assistance in meeting the demands for change. There appears to be great interest among the executives in learning the experiences of their peers and from those in similar positions in the private sector.

RESEARCH NEEDS

The research problem statements were drafted at the workshop in a process that was developed by the TRB Strategic Management Committee.

Lance A. Neumann, President of Cambridge Systematics, Inc., started the process by presenting a synopsis of research needs that were of a cross-cutting nature or did not fit specifically into one of the other three categories. He also addressed issues that were not specifically mentioned in the workshop discussions but were referenced in the two-page summaries or other recent lists of pertinent issues.

Following a general brainstorming session on the topics, groups were formed to develop specific problem statements. Daniel L. Dornan, Vice President of the Infrastructure Management Group, Inc., facilitated the cross-cutting initiatives group discussions. Individuals involved in drafting the problem statements were:

- Richard Albertin, Director of Resource and Risk Management, Office of the Commissioner, New York State DOT;
- Daniel L. Dornan, Vice President, Infrastructure Management Group, Inc.; and
- Jon Williams, Senior Program Officer, Transportation Research Board.

Research problem statements that follow are the direct result of discussions during the workshop. They reflect the desire of the CEOs to know more about working with other transportation providers, partnering with nontraditional organizations, and developing rapport with the public. They are also interested in how others are dealing with the recent demands placed on DOTs to meet new accounting requirements for asset management and to deal with changing fuel supplies.

Cross-Cutting Research Needs Statements

D-1. CROSS-JURISDICTIONAL SHARING OF SERVICES BETWEEN TRANSPORTATION PROVIDERS

Description of Research Problem

There are many examples of successful sharing of services and resources between state DOTs and local transportation agencies. These arrangements result in substantial cost-savings and service improvements. There is, however, no comprehensive inventory of the examples or opportunities. Consequently, there may be substantial loss of benefits because transportation service providers are not aware of the possibilities for shared services.

Proposed Research

Researchers will produce a comprehensive listing and objective evaluation of ongoing cross-jurisdictional sharing of services by state DOTs and local transportation providers. Possible examples include:

- Maintenance services (e.g., agility example from the Pennsylvania DOT);
- Pavement marking services;
- Signal maintenance and operation;
- ITS facilities and services;
- Cooperative purchasing of equipment, supplies, and consultant services; and
- Video-conferencing networks for distance learning, workshops, and meetings (e.g., TEL8 in the upper Midwest).

For each type of application, the work should include an estimate of the costs and benefits and the ease of implementation.

Cost

\$100,000

Duration

12 months

D-2. BEST PRACTICES OF DOT PARTNERING WITH NONTRADITIONAL ORGANIZATIONS

Description of Research Problem

State DOTs have entered into partnering arrangements with a variety of “nontraditional” organizations. Examples include state environmental agencies, facility maintenance

agencies, private developers, private design and construction firms, shippers, telecommunications firms, and other providers of transportation facilities and services. There is no comprehensive listing and evaluation of these arrangements available. Other state DOTs could benefit from such a product.

Proposed Research

Researchers will produce a comprehensive listing and objective evaluation of ongoing partnering arrangements with nontraditional organizations. The listing should include enough details, including an assessment from the participating state DOT, to enable another DOT to determine if the partnership might work in its state. Impediments and how they were overcome should be described. Contact names should also be provided.

Cost

\$25,000

Duration

6 months

D-3. GASB 34 IMPACTS ON STATE DOT INFRASTRUCTURE ASSET MANAGEMENT AND FINANCE

Description of Research Problem

In June 1999, the Governmental Accounting Standards Board (GASB) unanimously approved Statement No. 34: *Basic Financial Statements—and Management's Discussion and Analysis—for State and Local Governments*. Among its many new provisions, GASB 34 requires that state and local governments begin to report on the value of their infrastructure assets, including roads and bridges. Since many of the infrastructure assets owned by the public sector in this country are built and maintained by transportation agencies, state departments of transportation are among the largest public agencies that will be impacted by these new requirements. How state DOTs respond to GASB 34 may have a significant impact on statewide costs of public borrowing, public perception of how well the agency is managing its infrastructure programs, the long-term costs of infrastructure programs, and the proportion of agency funds devoted to construction versus preservation.

GASB staff has provided little guidance on how infrastructure agencies should respond to Statement No. 34's reporting requirements. Each jurisdiction is allowed to come up with its own asset management methodologies, systems, and standards. As a result, there is significant uncertainty among infrastructure agencies about how best to respond to the requirements of Statement No. 34 and a fear that the results will lack consistency or utility. In the absence of guidance from GASB, each state DOT is determining how to best comply. Some are likely to use the Depreciation Approach to reporting, while others are planning to adopt the Modified Approach. The selection or

development of asset management methodologies, systems, and standards is also being done on an individual basis. This lack of coordination in responding to GASB 34 by state DOTs will likely result in duplication of effort and a less-consistent, more costly set of responses. This may also result in higher costs of statewide public borrowing in which infrastructure reporting responses fail to meet the requirements established by the accounting and auditing industry, which will be responsible for evaluating the adequacy of state and local government financial statements.

Proposed Research

This research effort will be completed in two phases to address both short- and long-term objectives.

Phase I

With the effective date for GASB 34 implementation just a year away, there is a need to assess what the various state DOTs are doing or planning to do to respond. Such information would enable individuals and units responsible for responding to GASB 34 become better informed about the approaches, systems, and standards that others are using so that they can decide whether to develop new methodologies or share those already being used or developed.

The project will consist of a quick scan of all of the state DOTs regarding (1) whether they are planning to respond to GASB 34; (2) how they are planning to respond; (3) what approaches they are planning to use (valuation methodology, Depreciation versus Modified Approach); (4) asset management methods and systems they plan to use; (5) condition assessment standards they plan to use; and (6) the level and source of resources they plan to devote to this effort. This will involve developing and issuing a written survey instrument for individuals in each state DOT who are responsible for responding to GASB 34's infrastructure reporting requirements, tabulation of responses by state, and developing a summary report of the results of the survey (as well as contacts within each state DOT that responded).

Phase II

Over the longterm, there is a need to set up a mechanism to begin tracking the impact of the new infrastructure reporting requirements on asset management and financing techniques used by the state DOTs, so that the consequences can be measured and assessed. In the first part of this phase researchers would document the current status of asset management methods, systems, reporting mechanisms, and financing strategies used by the state DOTs. This would involve a literature search and written survey to confirm the information on current practices. The second part of this phase would involve case studies of innovative strategies (finance, management, reporting, etc.) that are being used to respond to GASB 34 as they evolve. The third part of the phase would be a comparison of the asset management and financing techniques documented in phase 1 with the new techniques reported in phase 2 to assess the outcomes of the new approaches for the state DOTs that have adopted them.

Cost

Phase I: \$75,000

Phase II: \$250,000

Duration

Phase I: 6 months

Phase II: 12 months

**D-4. BEST PRACTICES FOR FACILITATING CITIZEN INTERACTION
AND ENGAGING THE PUBLIC IN PROJECT PLANNING AND DEVELOPMENT****Description of Research Problem**

State departments of transportation are highly visible public agencies whose functions and services both impact and are impacted by the public. Informed citizens have increasingly become empowered to participate in state DOTs' efforts to carry out their missions. In some cases, the public has been enlisted as an advocate of planned improvements where their concerns are proactively addressed and their objectives aligned with those of the proposed project. On the other hand, environmental and community justice issues are often championed by citizen activists to oppose new construction or expansion of transportation facilities. How the public is engaged in the project planning and development process, and how information about a project is used to advance it, can make the difference between project completion and rejection.

Proposed Research

Researchers will conduct a short-term scan of best practices used by the state DOT community—as well as by other kinds of organizations responsible for the development of infrastructure—to gain public acceptance of projects and services proposed by state DOTs. This research would consist of both a literature search and written survey of state DOTs and other best-practice organizations, resulting in a written report to document the techniques used and results achieved. The benefit of this research would be informing senior decision-makers in state DOTs about effective public relations practices, including, techniques for gaining better understanding of public concerns and needs and for furthering public understanding of proposed project consequences.

Cost

\$50,000

Duration

6 months

D-5. QUICK RESPONSE METHODS FOR SHARING MANAGEMENT INNOVATIONS

Description of Research Problem

Each of the state DOTs is grappling with a similar set of problems, including staffing, program delivery, and strategic management. The DOTs are thus laboratories for experiments in what services to deliver and the best means for delivery. These experiments (both successes and failures) can be of great value to other states in terms of saving money, working smarter, and delivering more effective programs.

The DOTs have some mechanisms in place for information transfer. These include AASHTO committees, regional and national conferences and workshops, peer-to-peer exchanges, and informal contacts. These mechanisms are more oriented to technical topics and less to strategic management. There is a compelling need for top management 1) to have access to current information on what other states are doing; 2) to have access to practitioners who can explain or train, and 3) to build a body of knowledge about ongoing experience that can be analyzed for trends and patterns in light of the rapidly changing environment in which we operate.

Proposed Research

The work will have short term and long term elements.

Phase I

The first phase will have the following steps:

1. Define critical areas of DOT top management interest, using the output of the recent CEO Workshop on Managing Change in State DOTs, as reviewed by DOT participants.
2. Develop a method for determining which DOTs have relevant and significant experience in these areas. A faster, less intrusive, more focused and productive method than mail-back surveys is strongly suggested.
3. Synthesize information into brief statements, organized and cross-referenced by topics and listing contact persons.
4. Make the information available through several media, including an Internet website with a searchable database and printed documents.
5. Convene DOT leaders for informal discussion of both the content of the information base and the value of the process.

Phase II

The next phase will enhance the information-sharing resources from Phase I, as follows:

1. Develop an ongoing technique both for identifying evolving top management interest areas and collecting information on the most-current practices.

2. Continue to build the database, periodically synthesizing information into concise statements of practice related to current environment and needs. Attempt to identify and flag the situations in which each practice will be more or less appropriate.

3. Continue a three-pronged dissemination method: Internet, published material, and peer exchange.

4. Identify exemplary practices for addressing specific key issues. Build, broker and fund a speakers' bureau to disseminate information on these practices. Develop telecommunications methods for information contacts.

5. Identify the financial and institutional means to continue this effort through time.

Cost

Phase I: \$75,000

Phase II: \$200,000 annually

Duration

Phase I: 12 months

Phase II: Ongoing

D-6. DEALING WITH CHANGING FUEL SUPPLY, PRICE, AND ALTERNATIVES

Description of Research Problem

Fuel taxes are the primary means of funding the U.S. surface transportation system. In the short term, recent increases in the price of fuel at the pump have, in many states, raised the issue of whether state and national legislators will continue petroleum taxes at the present level. Cuts in fuel taxes have been discussed in a number of states and were recently made in both Connecticut and Indiana.

In the long term, petroleum is a non-renewable resource, and there are widely varying estimates of the remaining supply. At the same time, alternative-fuel vehicles such as the fuel cell and hybrid (electric battery and gasoline) are rapidly becoming more competitive in price and performance with conventional gasoline and diesel-powered vehicles. Both depletion of oil reserves and rapid growth in the use of alternative fuel vehicles creates uncertainty about the adequacy of current methods for funding transportation. This, in turn, jeopardizes the entire program.

Proposed Research

It is proposed to research and report on the impact on transportation funding of fuel supply and price and penetration of alternative fuel vehicles. The research will look at differing reputable forecasts relating to these subjects. Researchers will produce a nontechnical executive summary, including principal findings, threats to the present system of funding, and policy options. The following will be included:

1. Reasons for the current volatility in fuel prices and the likelihood and projected magnitude of future recurrences.
2. State-by-state responses to the recent increase in petroleum-based fuel prices.
3. Likely penetration of alternative-fuel vehicles and the impact on petroleum-fuel tax revenues.
4. Long-range forecasts of petroleum use and supply and likely revenue impacts.
5. Alternatives to petroleum taxes for financing transportation programs.

This work can be abstracted from existing work by the U.S. Department of Energy's Energy Information Administration, the California Energy Commission, the Florida DOT, and others. The task will be to use existing research and analysis to build a policy document usable by DOT top management for risk analysis and decision-making.

Cost

\$100,000

Duration

12 months

APPENDIX A

Managing Change in State Departments of Transportation

Workshop Program

Sponsored by

**Transportation Research Board
American Association of State Highway and Transportation Officials
Federal Highway Administration
Minnesota Department of Transportation**



**Radisson Hotel Metrodome
Minneapolis, Minnesota**

June 25–27, 2000, Minneapolis

WORKSHOP PURPOSE

State Departments of Transportation are operating in an environment of unprecedented change. Demands for new transportation services and technologies, changes in workforce composition and stakeholders' concerns, and a constantly changing political environment create both future uncertainty and demand for institutional change. In response to these challenges, state DOTs have undertaken a range of initiatives such as strategic planning, restructuring, performance measurement, process engineering, and outsourcing. AASHTO's report on "The Changing State DOT" identified drivers of change and approaches being taken by state DOTs in change management.

This 2-day workshop responds to a strong interest in peer-to-peer discussions among the CEOs and senior staff of the state DOTs about their experiences in managing internal and external change.

The workshop was planned by the Transportation Research Board Committee on Strategic Management in cooperation with the AASHTO Standing Committee on Quality, the Federal Highway Administration, and the Minnesota Department of Transportation. Attendance is limited to state DOT senior staff, members from the sponsoring committees, and selected representatives from FHWA and TRB.

PROGRAM

The conference will begin on Sunday with a review of the AASHTO report, "The Changing State DOT." Monday is devoted to CEO peer-to-peer exchange. There will be three sessions, each addressing a key topic. Each session will be introduced by a small roundtable of CEOs; the other CEOs will then be invited to join the roundtable and contribute to the discussion. The day will conclude with a summary discussion led by the Executive Directors of the sponsoring organizations.

On Tuesday, all workshop participants will meet in large and small groups to identify research needs suggested by the proceedings of the first day of the workshop. CEOs may wish to stay for this portion of the program. The most compelling research needs will be written into research statements by participants and will be included in the workshop final report, a TRB Circular. We will also produce, with the help of our sponsors, an executive summary that will be available for discussion at regional AASHTO meetings and other forums. In addition, FHWA plans to use results of this workshop as material for developing future NHI courses.

CONFERENCE FACILITY

The workshop is being held at the Radisson Hotel Metrodome in Minneapolis, Minnesota. Phone numbers are 1-800-822-6757 or (612) 379-8888, and the fax is (612) 379-8682. If you have any further questions, please contact Jon Williams at the hotel or, after the workshop, at (202) 334-2938.

CEO Workshop on Managing Change in State Departments of Transportation

PRELIMINARY AGENDA

Sunday, June 25: Setting the Stage

1:30–3:00 pm **TRB Strategic Management Committee Meeting**
Regents

12:00–5:00 pm **Registration**
Ballroom C/D
Foyer

3:30–4:45 pm **Opening**
Ballroom C/D

Welcome

Robert Johns, *Chair, TRB Committee on Strategic Management;*
Deputy Director, University of Minnesota Center for
Transportation Studies

Elwyn Tinklenberg, *Commissioner, Minnesota Department*
of Transportation

21st Century Transportation Agency

Thomas R. Warne, *President, American Association of State*
Highway and Transportation Officials; Executive Director,
Utah Department of Transportation

AASHTO Survey Results

Stephen C. Lockwood, *Vice President, Parsons Brinckerhoff*

5:00 pm **Reception**
Faculty

6:00 pm **Dinner**
Ballroom A/B

Speaker: Elwyn Tinklenberg, *Comissioner, Minnesota*
Department of Transportation
“Changing State Politics”

Monday, June 26: Where are We Going? What Have We Learned?

7:30–10:00 am **Registration**
Ballroom C/D
Foyer

7:30 Continental Breakfast*Ballroom C/D**Foyer***8:00–8:15 am Overview of the Day***Ballroom C/D*Robert Johns, *Chair, TRB Committee on Strategic Management*Kathy Stein, *Principal, Howard-Stein Hudson Associates***8:15–10:15 am CEO Session I:
Strategic Planning-Driven Initiatives***Ballroom C/D*

Focus	Topic	Discussion Examples
Priority Setting Process	<ul style="list-style-type: none"> Strategic planning Definition of mission/objectives 	<ul style="list-style-type: none"> User/stakeholder survey Definition of “corporate” priorities Champions/ leadership Broadened modal responsibilities Expansion of operations & management functions (ITS) Increase in freight focus
Performance Measurement	<ul style="list-style-type: none"> Quality Management Performance monitoring Stakeholder identification External accountability 	<ul style="list-style-type: none"> Definition & measurement of input/output/outcomes measures Customer definition/distinctions Customer satisfaction surveys Life-cycle orientation Legislative reporting Peer benchmarking Cooperative data sharing

10:15–10:30 am Break**10:30 am– 12:30 pm CEO Session II:
Workforce- & Reorganization-Driven Initiatives***Ballroom C/D*

Focus	Topic	Discussion Examples
Organization Reconfiguration	<ul style="list-style-type: none"> Decentralization/ Centralization Flattening Project focus Flattening of organization 	<ul style="list-style-type: none"> Structural changes to enhance intermodal focus Increased operational orientation Focus on public contact activities Project management orientation
Staffing	<ul style="list-style-type: none"> Downsizing Core competency 	<ul style="list-style-type: none"> Cross-functional teams Core competency definitions Workforce retooling Pay for performance programs

12:30–1:30 pm **Lunch**
Hubert Humphrey
Ballroom

1:45–3:45 pm **CEO Session III:**
Ballroom C/D **Process & Program Delivery Activity-Driven Initiatives**

Focus	Topic	Discussion Examples
Process Reengineering	<ul style="list-style-type: none"> • Business Process Reengineering 	<ul style="list-style-type: none"> • Reengineering of critical information or process-intensive procedures; Use of ISO 9000 • Centralization/standardization of information systems • QA/QC initiatives • Partnering • Cycle time reduction focus
Program Delivery Modifications	<ul style="list-style-type: none"> • Innovative Contracting • Outsourcing • Privatization 	<ul style="list-style-type: none"> • Commercialization of services • Use of incentive-based contracts • Broader cost & schedule risk sharing (Turnkey approaches) • Contracting out more core/routine functions • Increase in outsourcing design • Private project development • Use of open RFPPs • Experimentation with managed competition

3:45–4:00 pm **Break**

4:00–5:00 pm **Summary Discussion**
Ballroom C/D Moderators of Three CEO Sessions
 John C. Horsley, *Executive Director, American Association of State Highway and Transportation Officials*
 Anthony R. Kane, *Executive Director, Federal Highway Administration*
 Robert E. Skinner, Jr., *Executive Director, Transportation Research Board*

5:00–6:30 pm **Reception**
Ballroom C/D
Foyer

Tuesday, June 27: What Do We Need to Know?

7:00 am **Continental Breakfast**
Ballroom C/D
Foyer

7:30–8:30 am **Summaries and Observations from Day One**
Ballroom C/D Robert Johns, *Chair, TRB Committee on Strategic Management*
 Mark Ford, *Senior Project Manager, HDR, Inc.*

8:30–9:50 am <i>Ballroom C/D</i>	Large-Group Brainstorming
9:50–11:00 am <i>Alumni</i> <i>Regents</i> <i>Presidents</i> <i>Collegiate</i> <i>Northrup</i>	Work Groups: Selecting, Refining, and Writing Research Statements 1. Customer Driven 2. Workforce Driven 3. Activity Driven 4. Partner Driven 5. Other
11:00–11:30 am <i>Ballroom C/D</i>	Coordination Session
11:30 am–3:30 pm	Work Groups Continue (lunch in meeting rooms)
3:30–5:00 pm <i>Ballroom C/D</i>	Work Groups Report; Concluding Observations

APPENDIX B

Conference Participants

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APPENDIX C

Slide Presentation Summarizing Issues

CEO Workshop On Managing Change in State Departments of Transportation

A Summary of the
Key Outcomes
June 2000

CHANGE



"There is no question that change is upon us. However, we have a choice...it can happen to us or we can lead it. The key question for each of us is simply are you ready? Can you do it?"

Thomas R. Warne
President, AASHTO

The Workshop...



The Workshop...

- June 25-27 in Minneapolis
- Cosponsored by TRB, AASHTO, and FHWA
- Attendance...
 - 20 State Chief Executive Officers (CEO)
 - 34 States Represented
 - 93 attendees

The Workshop...

- Purpose
 - Surface the Key Issues of Dealing with Change
 - Share Experiences
 - Define the Research Needs
- Focus of the Discussion
 - Strategic Planning Driven Initiatives
 - Workforce Driven Initiatives
 - Process Driven Initiatives

Strategic Planning-Driven Initiatives....



- Focus on External
- "Customer Driven"
- Priority Setting...
 - Assessing Customer Expectations,
 - Resource Constraints
- Performance Measures
 - Legislative Accountability
 - Public Expectations

Planning...Key Discussion Points

- Make Strategic Planning Work
 - Connect to the public to reflect their priorities; market it back to the public and legislature
 - Build internal support within your agency
 - Champion the process...keep it alive and continuous...bridge between administrations
 - Tie to the budget ; tie to state economic development policies
 - The future...focus on the “process” to accommodate changes versus “prediction”

Planning...Key Discussion Points

- Performance Measures
 - Must translate to gains...rewards/resources
 - Focus...what is most important to meeting public’s expectations?
 - Don’t overwork or wait for perfect data...start with what you have
- Business Definition
 - Redefine our mission (e.g.,operations)
 - Project delivery is a key regardless

Workforce & Reorganization Driven Initiatives



- Focus on Internal Results
- Organizational Reconfiguration
 - Centralize/Decentralize
 - Flattening
- Staffing
 - Downsizing
 - Core Competency

Workforce...Key Discussion Points

- Develop the Workforce of Today
 - Turnover...“Get over it!”...plan for it
 - Growth...dual career tracks, emphasis on management skills, technical training
 - Listen to your employees...Baldrige criteria
 - Look beyond pay...professional development, training, experience, internal programs
 - Effect of outsourcing...new project management skills needed
 - Restructuring... from stovepipes to project teams

Workforce...Key Discussion Points

- Succession Planning...not “Preselection”
 - Target areas of greatest need with greatest resource investment (IT)...training, recruiting
- Workforce Development
 - New values, new outlooks...dress, careers
 - Reach into elementary/high schools
 - Creative approaches to attract entry level employees (scholarships, degree programs)
 - Look at non-traditional sources for hiring
 - Expand concept of “workforce”...contractors

“Some ask ‘Why are we training people that are just going to leave?’ We should also ask ‘What if we don’t train them and they stay?’ ”

Thomas R. Warne

Process and Program Delivery Activity Driven Initiatives



- Focus on Internal Processes
- Process Reengineering
 - Business Processes
 - Partnering
- Program Delivery
 - Innovative Contracting
 - Outsourcing
 - Privatization

Process...Key Discussion Points

- Defining New Ways of Doing Business
 - Innovations are being driven by need
 - The door is being opened wider as we gain experience...statutory changes, new practices
 - Do it smart!...run the numbers, cover risks
 - Someone may have already tried it..performance based maintenance, auctions

Process...Key Discussion Points

- Change the Way We Run Our Own Organizations
 - Remove barriers, outsourcing, inventory control, cost analysis, and managed competition
 - Project management...new skills
- Partnering with Local Governments
 - Bartering/sharing services
 - Creating new approaches for cooperation

Discussion Summary



TRB... Thoughts from Bob Skinner

- Hard job...getting harder
- More political than ever
- Creativity vs. "reinventing the wheel"
- Art... not a science
- Research opportunities galore
- Measuring the unmeasurable
- Institutionalize information exchange

AASHTO... Thoughts from John Horsley

- Becoming more and more customer-driven.
- Business happening at the "speed of life".
- Higher priority on motivating our people... becoming critical.
- More outsourcing means the move from "rowing" to "steering".
- Need greater emphasis on training
- AASHTO is a catalyst....share experiences.

*FHWA...**Ideas for Next Steps from Tony Kane*

- **Share Knowledge**
 - Regional and annual AASHTO meetings
 - TRB annual meeting - January
- **Research**
 - NCHRP, pooled fund, SPR
- **Training**
 - NHI Courses and AASHTO management courses

*FHWA...**Ideas for Next Steps from Tony Kane*

- **Scans and Twinning**
 - best practices, domestic
- **Federal, State and Local Regulatory and Statutory Changes**

What to look for next...

- **Priority Initiatives** - Clear sense of urgency to move forward with next steps quickly (e.g. by the 2000 AASHTO Meeting)
- **Support for Research** - Direction to press ahead with research topics, especially on short-term best practices and case studies
- **Workshop Products** - Due out shortly to continue focus on this topic (e.g., Meeting Summary, TRB Circular)

*Workshop Problem Statements:
Strategic Planning Research Needs*

- **Best Practices in Performance Measurement for Strategic Management**
- **Obtaining Customer Input on Needs and Satisfaction**
- **Building Strong Legislative Support for Strategic Transportation Agendas**
- **Effectively Marketing Transportation Departments' Products & Services**
- **Linking Strategic Planning to Resource and Implementation Decisions**

*Workshop Problem Statements:
Work Force Research Needs*

- **Effective Practices in Employee Succession Planning**
- **Technology and Information Needs for Changed Mission**
- **Best Practices in Employee Development**
- **Best Practices in Recruitment and Retention**
- **Identifying the Core Staff Competencies for 21st Century DOTs**

*Workshop Problem Statements:
Process Research Needs*

- **Utilizing Private Sector Resources**
- **Internal Re-engineering**
- **Streamlining Conventional Procurement Methods**
- **Innovative Contracting**
- **Cooperative Relationships**
- **Conventional Partnering**

*Workshop Problem Statements:
Cross-Cutting Research Needs*

- Cross-Jurisdictional Sharing of Services Between Transportation Providers
- Best Practices of Partnering with Non-Traditional Organizations
- GASB 34 Impacts on Infrastructure Asset Management and Finance

*Workshop Problem Statements:
Cross-Cutting Research Needs*

- Best Practices for Developing Citizen Input and Influencing Public Opinion
- Quick Response Methods for Sharing Management Innovations
- Dealing with Changing Fuel Supply, Price, and Alternatives

APPENDIX D

Summary of CEO Discussion Sessions

Where Are We Going? What Have We Learned?

This session was devoted to allowing Chief Executive Officers (CEOs) and senior staff of the state Departments of Transportation (DOTs) a peer-to-peer exchange about their experiences. Approximately 30 state CEOs or senior staff members spent the day discussing various issues in managing internal and external change. A conversation circle format inspired a lively exchange and the opportunity to share lessons learned.

STRATEGIC PLANNING–DRIVEN INITIATIVES

Customer Driven

Pete Rahn of the New Mexico State Highway and Transportation Department said that organizations in the public sector are in a race for their life. Rahn said his agency undertook a full strategic planning process that was multitiered to assess customer expectations. He said the strategic plan included a focus on customers, a partnership, and a mechanism to “get rid of the leeches.” He describes the steps as:

1. Customer Activities Relations: Assessing customer needs and expectations
2. Partnering: Sitting at the table with the agency to assist with delivering the product or service
3. Leaching: Getting rid of whatever is sucking the blood out of the organization.

He said the New Mexico strategic plan included 78 performance measures, which has brought about a strong culture of performance. Defining the organization’s mission and what it meant to the customers identified these performance measures.

Thomas Norton, Colorado DOT, said that his state has secured legislative support to measure performance statewide in all departments. He said setting goals and measurements has gone a long way toward helping develop a mission statement and investment plan. Norton said, “the best way to identify what you don’t want to do is to decide what you want to do and reorient priorities in your organization.”

Norton and CEOs of other state DOTs echoed the importance of a public relations component to strategic planning. Colorado brings in reporters for lunch to tell them what is going on in the agency. Brian Seales of the Vermont Agency of Transportation said they hired a public relations firm to get their success stories out. Seales also said a component of public relations is to let legislators know that you have gone to their constituents in setting priorities. This ensures a partnership with legislators, said Terrance Mulcahy of the Wisconsin DOT, who added that hiring a public relations firm helped the partnership. He said that strategic planning should always include getting your message out to the public.

Mulcahy said that the Wisconsin Strategic Plan includes cross training, marketing, focus groups, and organizations to provide outreach to internal divisions and the community.

Performance Measures

Allowing public input into the process enabled New Mexico to see that transportation was viewed as a key measurement for economic development. Puerto Rico established performance-based salaries for construction personnel. Idaho ties its budget to the strategic plan. Dwight Bower, Idaho Transportation Department, said, "If your budget does not reflect your outcomes you are setting yourself up for failure." He asked each division of the Idaho DOT to develop a strategic plan that supports the agency's overall goal.

Gregory Shea, Maine DOT, said that his agency has a cultural battle going on between two institutions. He said the state started out with a mandate from the Governor's office to put together a budget to include the strategic plan. But under state rules of performance, budgeting the measurements is not acceptable. He said the measurements are insufficient due to legislative dictate.

New Mexico has moved \$50 million from new construction to maintenance because of performance measurements Rahn said.

Connie Sorrell, Virginia DOT, said that performance measurements help to ascertain your workload and to determine where best to put your resources. She said some specific performance measures are:

1. Projects getting built on time, on budget;
2. Measuring process rather than result;
3. Direct responses from customers

WORKFORCE AND REORGANIZATION DRIVEN INITIATIVES

Focus on Internal Results

Victor Mendez, Arizona DOT, opened the discussion on what is needed to retain competency internally as opposed to outsourcing. He said his agency looked at the problem of losing engineers to the private sector. They implemented an Engineering Capability Plan and talked about it internally. This plan included improving the relationship with the legislators, who eventually approved a 6 percent pay increase for engineers. This made salaries competitive with the private sector and professional development and performance improved.

According to Ms. Sorrell, Virginia DOT had a major organizational change after two large downsizings in 10 years. Virginia had a major initiative to improve management training after a tremendous amount of outsourcing was done on design work. Sorrell said the state did an analysis of 50 contracts to compare in-house services with outsourcing.

"If an agency does not have core competency, they are deficient", said Mendez. However, Thomas Barry of the Florida DOT said they accept that some engineers will leave state service. He suggests that agencies "get over it" when people leave. Train people as best you can, he said, but having some of them leave is just a fact of life.

Thomas Warne, Utah DOT, had the most memorable quote of the meeting. “Some ask ‘Why are we training people that are just going to leave?’ We should also ask ‘What if we don’t train them and they stay?’”

To retain employees, the Virginia DOT has done some employee satisfaction surveys to determine what VDOT does right and wrong. A few examples of the questions are:

1. Do you know what is expected of you?
2. Have you received recognition or praise for doing good work?
3. Do you have the resources to get your job done?

Sorrell said as a result of the survey employee satisfaction went up. She said the most important thing you can do is pay attention to the relationship employees have with their immediate supervisors, adding that people don’t quit companies, but bosses.

South Dakota determined that they were their own worst enemy because the majority of the work was geared toward projects. Leon Schochenmaier said that they found that the functional organization of people on their staff was causing delays for projects. But after reorganization to two divisions—pre-letting and post-letting—planners and engineers worked more cohesively.

Succession Planning

The Washington, D.C., Department of Public Works has a third of its operations staff eligible for retirement in the next 2 years. Succession planning is required to meet these retirement projections. Brad Mallory, the CEO of PennDOT, pointed out that early outs are requiring the agency to broaden its vision of getting new employees. He pointed out that other sources for a talented employee pool could include retired military officers and underutilized women. Some actions that were discussed to improve workforce development included:

1. Working with educational institutions to ensure resources for employees;
2. Looking at issues, beyond salary, that are important to employee retention;
3. Deciding what functions can best be centralized vs. decentralized; and
4. Adopting new values and new outlooks regarding, for instance, dress, careers, daycare, and flex time.

PROCESS AND PROGRAM DELIVERY ACTIVITY-DRIVEN INITIATIVES

Participants in the session echoed the sentiment that a Department of Transportation is becoming more of a contracting organization. This means we have to change the way we run our organizations without sacrificing quality, Tom Barry, Florida DOT CEO, told the group. John Craig, Nebraska DOT, said that there is a need for:

1. Partnering efforts with contractors, consultants, cities, and counties to extend the workforce;
2. Reengineering business practices;
3. Bartering and sharing services; and
4. Creating new approaches for cooperation.

The Pennsylvania DOT initiated an Agility program that allowed bartering between state and local governments. The traditional state of relationships had been negative until various agencies started swapping services. As an example, local governments mow the grass for the DOT, which in turn paints pavement markings for the local municipalities. This arrangement improved relationships with the local governments and unions who were included in the design of the program.

In New Mexico incentive programs were used to encourage contractors to meet deadlines. The state did not have money needed for a contract incentive program for a major project, but decided to offer the contractor as an incentive a portion of a parcel of land purchased for the project right-of-way. During the project the property will be used by the contractor for supplies and equipment.

For a complex project in Colorado that must be done while continuing traffic flow in the project area, a public relations team was hired to develop a communications program for the project, to be implemented by the contractor. The contractor must keep traffic moving during construction while maintaining good communication with the public. A goal of good public relations was more important to the DOT than the time of completion.

Another program initiative discussed was in North Carolina, where the DOT initiated a managed competition program. City of Charlotte employees bid on their own projects and won 85 percent of the bids. Other innovative approaches included one by the Oklahoma DOT, which formerly opened bids only in the afternoon but now opens them twice a day. Now contractors who do not win in the morning have an opportunity at the afternoon bid opening, and often the bids are lower in the afternoon.

CONCLUSION

The session concluded with a summary discussion led by the executive directors of AASHTO, FHWA, and TRB. They summarized the things that need to be done next:

1. Sharing knowledge,
2. Research,
3. Training,
4. Scans and twinning, and
5. Federal, state, and local regulatory and statutory changes.

APPENDIX E

Managing Change in State Departments of Transportation

Executive Summary and Research Agenda

INTRODUCTION

State Departments of Transportation (DOTs) in the 21st century are confronted with fast-paced growth and demands for change—demands created by calls for new transportation services and technologies, altered workforce composition, new stakeholder concerns, and a constantly changing political environment. To address these challenges, state DOTs have undertaken a range of initiatives such as strategic planning, restructuring, performance measurement, process engineering, and outsourcing. Less well-known, however, are fundamental management and organizational initiatives now taking place that go beyond the project development process to other aspects of organization and program activities.

In a peer-to-peer exchange during a workshop sponsored by the Transportation Research Board Committee on Strategic Management, AASHTO Standing Committee on Quality and the Federal Highway Administration (FHWA), Chief Executive Officers and senior staff of DOTs discussed issues related to managing internal and external change and the lessons they had learned. The workshop pinpointed a compelling need for research in four areas, listed below and followed by a discussion of research needs. The areas are:

- A. Strategic Planning-Driven Initiatives,
- B. Workforce- and Reorganization-Driven Initiatives,
- C. Process- and Program Delivery-Driven Initiatives, and
- D. Cross-Cutting Initiatives.

A. STRATEGIC PLANNING-DRIVEN INITIATIVES

A-1. Best Practices in Performance Measurement for Strategic Management

State DOTs traditionally have used a number of measures to track performance at various levels. Many of these measures have been focused on monitoring operations or tracking the performance of programs in specific service areas. However, many of these measurement systems have been more concerned with output and efficiency than with outcomes and real results. While these systems are often useful to managers at the operating and program levels, they tend to be less responsive to the information needs of executive teams concerned with managing strategic issues.

Some states are involved, or soon will be, in developing or updating strategic plans and related performance measures under legislative mandates. Therefore, there is real need to identify and document best practices in the design, implementation, and use of submeasurement systems.

The objective of research proposed for this area is to document the current state of the practice of performance measurement at the strategic level in DOTs. This product will be a synthesis of best practices that can be adapted by other DOTs as they create or modify their own measurement systems.

Research should include the following three principal tasks:

- Identifying leading-edge departments in this area through a quick, informal reputation scan in addition to a brief, fast-turn-around, mailed survey;
- Obtaining information from these departments on their strategic-level measurement systems; and
- Preparing a concise, straightforward synthesis that will make the findings of this research readily accessible to DOTs.

The AASHTO report, *The Changing State DOT*, includes a strategic management context but does not address performance measurement at the level proposed.

A-2. Obtaining Customer Input on Needs and Satisfaction

DOTs have articulated a critical need for doing quick research on the state of practice in customer surveying and other feedback techniques. They have identified two important aspects of customer information: (1) users' satisfaction with current services and products, and (2) understanding what customers think are the most-needed services that the DOT should be providing. This information can be used to assess and improve performance and to market agency effectiveness. CEOs have highlighted their need for information on user satisfaction so they can identify strategic priorities, communicate with legislators and citizens, and target programs and funds to meet critical needs.

The objective of this proposed research is to prepare a synthesis of all state DOT practices for obtaining customer input and feedback and to develop a tool kit of effective customer research initiatives. This research would be done in two phases:

- Phase I: Inventory current practices in customer feedback and the ways DOTs use such feedback, and
- Phase II: Develop best practices assessment and tool kit.

A-3. Building Strong Legislative Support for Strategic Transportation Agendas

Because legislative bodies often develop and approve transportation funding and implementation strategies, they are critical to the success of DOT strategic priorities. State DOTs must focus on increasing the involvement of state legislators in order to engender support and legislation that will provide funding for transportation programs.

This research project would include the following tasks:

- Identifying current practices and approaches to involve legislators;
- Developing best practices;
- Recommending appropriate education and training; and

- Identifying examples of successful outcomes in terms of funding and implementation programs.

A-4. Effectively Marketing Transportation Departments' Products and Services

The general public and specific customer groups rely heavily on transportation systems. Because mobility and safety are essential to economic vitality and personal well being, legislators and other stakeholders are keenly interested in whether the products and services transportation departments deliver to meet customer needs and in the quality with which they are delivered.

Transportation agencies face a critical challenge in winning public trust. If they are to successfully fulfill their mission, they must have tools for marketing products and services and sustaining public and political support. This research proposes to:

- Survey marketing techniques of consumer-driven businesses in the public and private sector;
- Identify and describe important marketing concepts that DOTs need to understand and adopt;
- Develop recommendations on how transportation departments can interpret customer data and make responsive business decisions;
- Recommend best practices for marketing and outreach to customer groups;
- Recommend organizational structures that support sustained, effective marketing; and
- Cite case studies that illustrate the applicability of marketing techniques in transportation agencies.

A-5. Linking Strategic Planning to Resource and Implementation Decisions

Many state DOTs have begun strategic planning efforts. Strategic plans have been developed that include missions, visions, goals, and objectives. There have been obstacles, however, in linking these plans to the actual decisions that are made by DOT leaders.

Conceptually, there is general understanding that strategic planning should be adaptable to changing conditions, both internally and externally. It should also be closely linked to customer input, both top-down and bottom-up, and should be used to redirect resources to the strategic priorities of the department. There have been major challenges in bringing these concepts to reality.

This proposed research would include three phases, a survey, development of case studies, and research and development of new models and guidelines. Specifically, the research will include:

- Phase I: Survey of state DOTs and other organizations
- Phase II: Detailed case studies
- Phase III: Research and development of new models and guidelines

WORKFORCE- AND REORGANIZATION-DRIVEN INITIATIVES

B-1. Effective Practices in Employee Succession Planning

Well-qualified and competent personnel in supervisory, technical, and management positions are critical to effective transportation organizations. Effective succession practices are needed to deal with crises resulting from imminent retirements in several agencies, but they can also improve successor determination throughout transportation agencies in general. Ensuring the selection of effective successors has become more difficult because of the large number of retirements and the gaps in training, skills, and experience resulting from past hiring freezes or reductions in force. The proposed research should provide guidance regarding best practices in public and private sectors for succession planning and implementation. Information would be supplied covering, at the least, alternative strategies, processes, and time frames and their positive and negative impacts, effectiveness, cost, and organizational impact.

B-2. Technology and Information Needs for Changed Mission

Many transportation agencies are facing significant changes in or additions to their mission and responsibilities. Unforeseen investments of time and resources for developing capabilities to address those new requirements can have serious consequences.

Changes in transportation agency mission and new responsibilities lead to new requirements for information and technology. This research would review changes in mission and responsibilities that have recently occurred or are underway and would analyze information and technology needs to support new initiatives.

B-3. Best Practices in Employee Development

State DOTs are experiencing unprecedented change. At a time when there is increased pressure for reducing state governments, DOTs are expected to deliver new and larger services, and are finding it necessary to outsource much of the work that was formerly done in-house. This trend has resulted in many staff members having to assume new roles. There is a critical need for guidelines, programs, procedures, and overall philosophies for training staff for the roles they are being required to fill. A DOT must anticipate training needs to meet its current and future demands.

The proposed research would address these problems by:

- Surveying the state DOTs, FHWA, and other organizations, including private industry, to determine which agencies have experienced a changing environment and how they trained staff for new roles.
- Reviewing the literature for guidelines and recommendations for training staff for changing roles.
- Summarizing the findings from these first two tasks and providing recommendations for training for new roles.

B-4. Best Practices in Recruitment and Retention

Many states are experiencing difficulty in hiring and retaining technical personnel. Recent changes in the marketplace have substantially increased the competition for information technology (IT) engineers, technicians, and related professions. In addition, some states are experiencing difficulty in hiring and retaining nontechnical personnel.

Researchers should define successful strategies from both public and private sectors that DOTs can use to recruit and retain employees. Their activities should include:

- Researching each DOT's effort to recruit and retain;
- Assembling examples of other public sector initiatives; and
- Providing a description of private sector efforts.

The intent of this research is to assemble information that has already been published in both the public and private sectors.

B-5. Identifying the Core Staff Competencies for 21st Century DOTs

A shortage of skilled employees has forced DOTs to look at better ways to use limited employee resources. Changes in technology requires the DOTs to take a hard look at what skills are essential to make them efficient and effective organizations in the face of constant change.

The research would determine:

- The core competencies in DOTs;
- How these competencies were identified by the DOTs;
- The best practices by DOTs to identify these competencies; and
- The tools used to scan the environment to identify likely competencies.

PROCESS- AND PROGRAM DELIVERY-DRIVEN INITIATIVES

C-1. Utilizing Public Sector Resources

There is a need for current information about efforts and techniques in state DOTs to utilize the private-sector for activities previously performed in-house.

The proposed research would include:

- Examples of outsourcing over the complete range of programs and project delivery activities;
- Use of managed competition;
- Measurements for determining benefits of outsourcing;
- Issues associated with the construction industry; and
- Legal and administrative barriers.

C-2. Internal Reengineering

State DOTs need current information about how other state DOTs have re-engineered internal processes to improve project management and accelerate project delivery.

The scanning effort would include:

- Characteristic descriptions of how state DOTs are organized to deliver projects;
- Techniques to analyze program and project delivery; and
- Descriptions of techniques, covering a complete range of project and program delivery activities such as design, right-of-way, construction, operations, and maintenance.

C-3. Streamlining Conventional Procurement Methods

There is a need for information about how state DOTs are streamlining conventional procurement methods to expedite their program and project delivery activities.

The objective of this proposed research is to gather information and share techniques describing state-of-the-practice for reducing time and cost in the selection of vendors, consultants, and contractors for various programs and project activities. It would include:

- Measures of streamlined selection;
- Coping with legal and institutional barriers;
- Model contracts; and
- Creative uses of electronic bidding and the Internet.

C-4. Innovative Contracting

State DOTs need information about how other state DOTs are employing innovative contracting methods to deliver better, more cost-effective service.

The proposed research will include a scanning effort that will assess the state-of-the-practice in innovative approaches to project delivery.

C-5. Cooperative Relationships

State DOTs need information about how other state DOTs utilize a range of approaches to program and project delivery that involve innovations for sharing costs and responsibilities with other public and private entities.

This research would include a scanning effort to review state-of-the-practice regarding

- Public-private partnerships between state DOTs and other state agencies or local governments involving barter, responsibility reallocation, and cross compensation; and
- Public-private partnerships, including commercialization and privatization of public facilities and services.

C-6. Conventional Partnering

There is a need for information about how state DOTs are using partnering. Researchers will review the state of the practice in partnering across the complete range of owner–vendor relations, including:

- Internal and external partnering; and
- Effectiveness in improving quality and time and cost adherence and reducing claims.

CROSS-CUTTING INITIATIVES

D-1. Cross-Jurisdictional Sharing of Services Between Transportation Providers

There are many examples of successful sharing of services and resources between state DOTs and local transportation agencies. These arrangements result in substantial cost savings and service improvements.

Researchers will produce a comprehensive listing and objective evaluation of ongoing cross-jurisdictional sharing of services between state DOTs and local transportation providers.

D-2. Best Practices of DOT Partnering with Nontraditional Organizations

State DOTs have entered into partnering arrangements with a variety of nontraditional organizations. No comprehensive listing of such arrangements is available, and other state DOTs could benefit from such a product.

Researchers will produce a comprehensive listing and objective evaluation of ongoing partnering arrangements with “nontraditional” organizations.

D-3. GASB 34 Impacts on State DOT Infrastructure Asset Management and Finance

In June 1999, the Governmental Accounting Standards Board (GASB) unanimously approved Statement No. 34: *Basic Financial Statements—Management’s Discussion and Analysis—for State and Local Governments*. Among its many provisions, GASB 34 requires that state and local governments begin to report on the value of their infrastructure assets, including roads and bridges. The lack of coordination among state DOTs in responding to GASB 34 will likely result in duplication of effort and a less consistent, more costly set of responses.

This research effort will be completed in two phases to address both short- and long-term objectives.

- Phase I: Assess what various DOTs are doing or planning to do to respond to GASB34
- Phase II: Set up a mechanism to begin tracking the consequences of the new infrastructure reporting requirements on State DOT asset management and financing techniques so that the long-term consequences can be measured and assessed

D-4. Best Practices for Facilitating Citizen Interaction and Engaging the Public in Project Planning and Development

State DOT functions and services both impact and are impacted by the public. Informed citizens have increasingly become empowered to participate in state DOT efforts to carry out their missions. How the public is engaged in the project planning and development process and how DOTs use information to advance these projects can make the difference between project completion and rejection.

Researchers will conduct a short-term scan of best practices used by the state DOT community, as well as by other kinds of organizations responsible for the development of infrastructure, concerning public participation and public relations activities. This research would consist of both a literature search and a written survey of state DOTs and other best-practice organizations. The benefit of this research would be information for senior decisionmakers in state DOTs regarding effective public relations practices and techniques for gaining better understanding of public concerns and needs.

D-5. Quick Response Methods for Sharing Management Innovations

Many state DOTs are grappling with staffing, program delivery and strategic management issues. The DOTs are thus laboratories for experiments in what services to deliver and the best means for delivery. These experiments (both successes and failures) can be of great value to other states in terms of saving money, working faster, and delivering more-effective programs.

There is a compelling need for top management to have access to current information on what other states are doing; to have access to practitioners who can explain or train; and to build an ongoing body of knowledge about overall DOT experiences.

The proposed research will:

- Define critical areas of DOT top management interest;
- Develop a method for determining which DOTs have relevant, significant experience in these areas;
 - Synthesize information into brief statements organized and cross-referenced by topics;
 - Make information available through several media, including an Internet website with a searchable database and printed documents; and
 - Identify exemplary practices for addressing specific key issues.

D-6. Dealing with Changing Fuel Supply, Price, and Alternatives

Fuel taxes are the primary means of funding the U.S. surface transportation system. In the short term, recent increases in the price of fuel have raised the issue of whether state and national legislators will continue petroleum taxes at the present level.

It is proposed to research and report on the impact on transportation funding of fuel supply and price and the penetration of alternative fuel vehicles. The research will

reference differing reputable forecasts relating to these subjects. The following topics will be included in the research:

- Reasons for the current volatility in fuel prices;
- State-by-state responses to the recent increase in petroleum-based fuel prices;
- Likely penetration of alternative-fuel vehicles and the impact on petroleum-fuel tax revenues;
- Long-range forecasts of petroleum use and supply, and likely revenue impacts; and
- Alternatives to petroleum taxes for financing transportation programs.