

Managing Change in State Departments of Transportation

Scan 1 of 8: Innovations in Strategic Leadership and Measurement for State DOTs

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Submitted by:

**T. H. Poister
D. M. Van Slyke
Georgia State University
Atlanta, Georgia**

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FOREWORD

Change Management in State DOTs

State departments of transportation are operating in an environment of unprecedented change. Evolving demands for transportation services, new technologies, workforce composition, stakeholders' concerns, and a constantly changing political environment create continuing demands for institutional change. To address these challenges, many state DOTs are undertaking a range of initiatives such as strategic planning, organizational restructuring, performance measurement, process engineering, and outsourcing.

Both anecdote and survey suggest that change management is now the major preoccupation of senior management. However, the rate of change is very uneven and not well-understood. Indeed, there appears to be more *innovation* than *imitation* -- since the creative approaches being introduced are not documented or widely discussed. Little "literature" on state DOT change management has been developed -- either case studies or "how to" material.

AASHTO's Strategic Interest

A 1998 AASHTO report on "The Changing State DOT" identified drivers of change and approaches being taken by state DOTs in change management. AASHTO's Year 2000 Strategic Plan activities then introduced an element concerned with facilitating institutional change. Meanwhile, a newly reorganized TRB Committee on Strategic Management, through calls for papers and annual meeting sessions, focused on studying the range of changes occurring in transportation organizations. This led to the formation of a committee to plan a special workshop on strategic management under the joint sponsorship of the Transportation Research Board Committee on Strategic Management, AASHTO Standing Committee on Quality, and the Federal Highway Administration (FHWA).

The Strategic Management Workshop

The two-day workshop (June 25-27, 2000) in Minneapolis was organized to facilitate peer-to-peer discussions among the CEOs and senior staff of the state DOTs about their experiences in managing internal and external change. This workshop focused on sharing recent experiences with managing internal and external change and lessons learned. Twenty state DOT CEOs participated in the workshop, and 35 state DOTs were represented by CEOs or senior staff. Conference dialogue dealt with three principal management challenges:

1. Strategic planning-related initiatives
2. Workforce and reorganization-related initiatives
3. Process and program delivery-related initiatives

The discussions identified a wide range of specific issues within each area that attendees felt deserve organized review via case studies, assessment of the state of the practice, and identification of promising concepts, approaches, and tools. Workshop participants used the results of these discussions to identify research that would help state DOTs lead and manage their changing organizations. Twenty-two research problem statements were crafted around the three subject areas.

TRB, at the urging of AASHTO and participating CEOs, immediately set up an NCHRP panel, chaired by Mary Peters of Arizona DOT, to develop a multiyear NCHRP research program under the 20-24 program established for special AASHTO research related to DOT administration. The panel combined and prioritized problem statements into eight strategic management issues for priority research. In view

of the lack of written material on these subjects, the panel decided to start with broad "scans" of the state of the practice in each area to provide guidance for a substantive multiyear research program. Each scan would summarize the challenges, document examples of current innovations, and recommend the appropriate initial components of a research program. The eight-month scan program -- including presentations at AASHTO Board meeting roundtables -- represented a highly unusual rapid-response approach to the priority placed on these issues by AASHTO and TRB.

Cross-Cutting Findings from the Initial Eight Scans

The eight scans produced considerable evidence of the number and breadth of change management initiatives within state DOTs. In general, these initiatives are concerned with the agencies as institutions, their mission and leadership, organization and workforce, process, and resources. The principal, common forces of change include:

1. Deliberate reorientation of strategic objectives in response to program limitations (Scan 3, operations), new technology (Scan 6, information technology), or funding (Scan 8, innovative finance)
2. Evolution of new forms of cooperation for improved service delivery with other public agencies (Scan 7, partnerships) and the private sector (Scan 2, outsourcing)
3. Workforce strategies (Scan 5) in response to downsizing, retirements, competition, and the need for new capabilities
4. The need to institutionalize and measure change management (Scan 1, strategic leadership) and improve agency image in the overall constituent context (Scan 4, positioning)

Overall, state DOTs today appear to be evolving away from single-purpose entities with standard approaches to producing a limited number of well-understood products and services. Instead, they are moving toward more flexible organizations designed to respond to constantly changing missions with ever-increasing efficiency through a shifting coalition of partners and stakeholders. Managers of these changes can clearly benefit from access to collective experience, including a better sense of the state of the practice and specific resources based on the more promising approaches. The scans identify some of the most valuable experience and provide important pointers to key issues for further dialogue and research.

Individual Scan Highlights

Scan 1 -- Innovations in Strategic Leadership and Measurement for State DOTs: Strategic planning itself is increasingly widespread in state DOTs. However, many CEOs find that the process often breaks down in the implementation stage -- creating buy-in and "institutionalization" of key change vectors. Yet some promising solutions are being found, including widespread participation of a variety of stakeholders in the process, a customer focus in terms of strategy and priorities, top management commitment to implementing the strategic agenda, ongoing communication to promote it, and "omni-directional alignment" among goals, performance measures, and budgets. Further research in each of these areas is needed to strengthen and integrate strategic management practices. *(Scan by T.H. Poister and D.M. Van Slyke of Georgia State University)* **This scan is the topic of this file.**

Scan 2 -- Innovations in Private Involvement in Project Delivery: Outsourcing -- commonly employed for construction and design services to cope with lumpy demands or staff downsizing -- is spreading to other functions within the project and service delivery functions. It is increasingly important to understand the relative costs and quality of work conducted in-house versus by external private firms. Current evidence is not conclusive, as cost comparisons may not have been systematic. More research and more collaborative efforts are required by transportation organizations to identify best practices and possible standard procedures. *(Scan by Dr. D. Hancher, P.E. and R. Werkmeister, P.E., University of Kentucky)*

Scan 3 -- Innovations in Institutionalization of Operations: Systems operations and management is already considered a mission priority by many state DOTs. However, the several types of operations-related activities -- ranging from ITS to maintenance of traffic -- are stovepiped and decentralized in most state DOTs. In most cases, there appears to be no common department-wide policy framework around which to organize for efficient integration of services and sustainable funding. Some member departments are establishing performance measures by conducting customer surveys, but implementation for program management is still in the very early stages. Further case study research into promising approaches is needed to connect customer interests and performance measures to integrated operations activities. *(Scan by Philip J. Tarnoff)*

Scan 4 -- Innovations in DOT Communications, Image, and Positioning: The scan focused on states known to be addressing issues of communications, image, and positioning. Those that were most advanced focused on improving both internal communications with staff and external communications with the public, elected officials, and the media. Some innovative states are assessing their image and identifying ways in which to clarify and improve it with the public, recognizing that image enhancement and improved constituent communications may lead to an improved position for the agency, to new resources, and to a more supportive audience for the agency's work. Increasingly, states report that proactive efforts to better communicate and to position the agency positively with decision makers have led to increased public support and legislative funding for the DOTs. Additional research in communications, positioning, and marketing to various constituencies was felt to be needed. *(Scan by K. Stein and R. Sloane of Howard/Stein-Hudson Associates)*

Scan 5 -- Innovations in Work Force Strategies: State departments of transportation face severe challenges in recruiting and maintaining their workforces. Innovative approaches are being taken to recruitment of core competencies such as IT and senior civil engineering. Retention and succession approaches were also investigated, including mentoring and reverse mentoring. However, more case study and research are needed in defining, recruiting, and retaining the necessary workforce. *(Scan by C. Gilliland of the Texas Transportation Institute)*

Scan 6 -- Innovations in Organization Development as a Result of Information Technology: The rapidly changing environment of IT is challenging DOTs to deal with emerging opportunities and problems. This scan identified the range and types of new opportunities related to IT itself as well as related organizational development implications. Key issues include organization of the IT function, the cost-effective degree of outsourcing, and a range of management issues such as handling information overload, funding, procurement, and training. These areas suggest future research directions. *(Scan by C. Cluett and K. Baker of Battelle Seattle Research Center)*

Scan 7 -- Innovations in Public-Public Partnering and Relationship Building in State DOTs: A wide variety of partnerships among state DOTs; other state, local, and federal agencies; and public stakeholders are improving project and program delivery and increasing efficiency across agency or jurisdictional lines. Promising areas for partnering include achieving environmental streamlining, rationalizing state-local maintenance responsibilities, and joint community problem solving. Examination of successful partnerships and relationships identifies common elements of success and provides a starting point for the development of new partnering tools more applicable to longer-term, peer-to-peer relationships among DOTs; other state, local, and federal agencies; and non-governmental stakeholders. *(Scan by Mark Ford of HDR-Portland)*

Scan 8 -- Innovations in Project Financing: There is now a very rich menu of innovative revenue sources and finance techniques. New revenues are available from toll facilities, HOT lanes, value or congestion pricing, special assessments and fees, shared resource projects, and/or joint development. These revenues can be combined to leverage scarce federal aid through both debt and equity approaches, capitalizing on the new flexibility within the federal aid and some state programs. Such new approaches to project financing can also benefit from innovative project development approaches. Research is needed on promising approaches to mainstream these approaches within transportation agencies. *(Scan by A. Reno and L. Hussey of Cambridge Systematics, Inc.)*

Mr. Stephen Lockwood
Parsons Brinckerhoff

Mr. Robert C. Johns
University of Minnesota
Center for Transportation Studies

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Executive Summary

This report presents the findings of an initial scan of innovations in strategic leadership and performance measurement in state departments of transportation (DOTs). This research grew out of a workshop on managing change in state DOTs which was conducted in Minneapolis, Minnesota, in June, 2000. Strengthening their capacity for strategic leadership is of critical importance to DOTs at this point because they are functioning in an era of unprecedented change. While many of the Chief Executive Officers (CEOs) at the Minneapolis workshop indicated that they were comfortable with their organizations' strategic planning capabilities, there was a consensus that the process often breaks down in the implementation stage. Overcoming this failure to implement major change effectively requires innovative approaches to developing strategic agendas, building ownership of strategies throughout the organization, mobilizing external support, using strategy effectively to drive decisions down through the organization, targeting resources to achieve strategic objectives, and implementing appropriate performance measurement systems to evaluate success.

Collectively, these activities form the scope of inquiry of this initial scan. The information on innovative practices identified in this research was collected in part through a review of existing literature, but primarily through interviews with CEOs and other executives in 21 transportation departments. In addition, most of those who were contacted forwarded documents and other materials from their DOTs, which were then reviewed and sometimes prompted additional follow-up interviewing. Those DOTs that were targeted for interviews were identified in the literature, selected on the basis of their participation in the Minneapolis workshop or general reputation in the field, or suggested by others who were interviewed along the way.

The interviews with CEOs and other executives, along with the review of relevant literature and materials sent by many DOTs, served to identify a variety of innovative approaches to strategic leadership and performance measurement in state DOTs. Most DOTs reported using what has become a fairly conventional approach to strategic planning, but a few have employed balanced scorecard models to ensure a holistic view of strategy and to enforce a discipline in tying performance measures to objectives and aligning operating level activities with departmental priorities. The scan also found that DOTs are involving larger numbers of managers, and even employees, in their strategic planning processes, soliciting input from external stakeholders in their planning, and making substantial efforts to be more explicitly oriented to customers needs and expectations than used to be the case.

The initial scan also found that many DOTs are working hard to use their strategic plans to drive decisions made throughout their departments, principally with the use of action plans and business planning processes. Whereas DOT information systems traditionally have focused on performance at the program and operating levels, the new generation of measurement systems are tied directly to overall strategy. In some departments, such measurement systems have become the main driving force and central management tool for bringing about change and improving performance. The scan also found, however, that while DOT measurement systems are more results oriented than ever before, challenges regarding the use of measures of real transportation outcomes as well as economic and environmental impact still remain.

Many DOTs work very deliberately to get managers and employees to identify with and actively support their organizations' strategic plans. One way they build this kind of commitment is simply by assigning "ownership" of strategic goals or initiatives to particular individual managers. Others have systems for developing personal level goals and objectives for managers and employees that are closely aligned with departmental strategies. Some DOTs have also been revamping their budgeting and financial management systems in order to ensure that resource allocations are driven by overall departmental strategy, using such tools as activity based costing and various forms of results based budgeting or program budget systems. However, this scan did not reveal any particularly innovative approaches to mobilizing external support for DOT strategic plans.

In summary, although based on a necessarily "spotty" approach, it is clear from this initial scan that many state DOTs are taking innovative approaches to strengthen their capacity for strategic leadership and performance measurement. It is equally clear that in this area, not surprisingly, "one size does not fit all." Nevertheless, it is possible to distill some guiding principles from the DOT experience to date regarding the development and use of leading edge strategic management systems. Briefly, success in strategic leadership is heightened by:

- Widespread participation of both internal and external stakeholders in developing strategic plans, performance measurement systems, and other strategic management processes.
- A customer orientation in terms of strategy and priorities, supported by systematic customer feedback and customer oriented performance measures.
- Top management commitment to the strategic agenda and its effective implementation, as demonstrated by the use of planning, decision making, and evaluation processes that flow directly from overall strategy.
- A deliberate pace and frequent reinforcement in implementing strategic planning and management processes, recognizing that it is unlikely to "get it all done in six months" or "get it all right the first time".
- Ongoing communication to explain strategy, promote it, and report progress in order to building understanding and buy-in on the part of both internal and external stakeholders.
- Emphasis on building "omni-directional alignment" (Kassoff, 2000) between customer concerns and departmental goals, higher level goals and lower level goals, strategic priorities and budget allocations, and strategies and performance measures, etc.

Finally, this initial scan concludes with the identification of a research agenda intended to help DOTs further strengthen their strategic leadership capabilities. These research projects focus on (1) integrated strategic management practices, (2) the interrelationships among strategic planning, transportation systems planning, and asset management, (3) incorporating transportation outcomes and other impact measures in strategic plans, (4) sustaining and adapting strategic management processes through transitions of administrations, (5) effective communications strategies for promoting strategic plans, and (6) obtaining customer input regarding needs and satisfaction.

1. Introduction

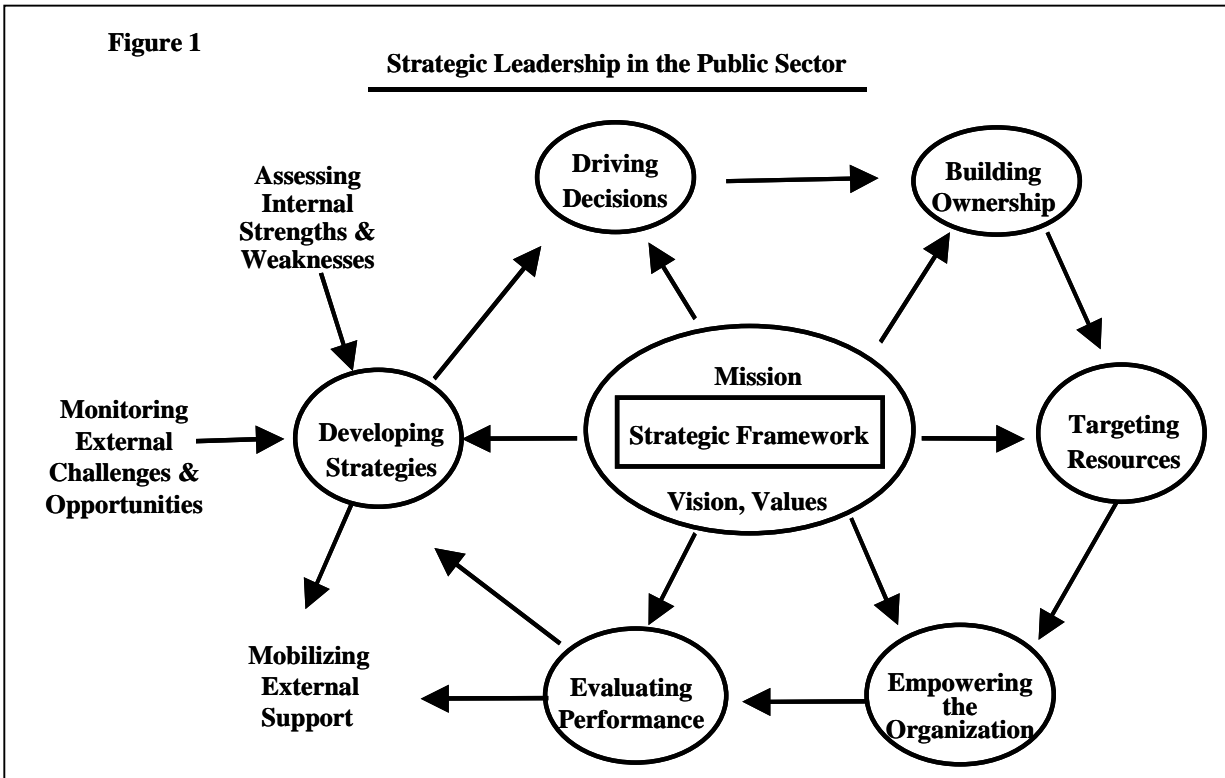
This report presents the findings of a surface level exploration, or initial scan, of innovations in strategic leadership and performance measurement in state departments of transportation (DOTs). This research grew out of a workshop on managing change in state DOTs which was conducted in Minneapolis, Minnesota, in June, 2000. Strengthening their capacity for strategic leadership and performance measurement is of critical importance to state DOTs at this point because they are functioning in an era of unprecedented change. The “drivers” of this change include the following:

- Increased demands for accountability from the public, the media, and elected officials
- Pressure to become more customer oriented
- Pressures to produce more, in some cases with fewer resources or smaller workforces
- Growing recognition of the need to find multi-modal solutions to transportation problems
- Mandates for DOTs to support economic development and sustainable environmental goals as well as transportation outcomes
- Dramatic advances in available technologies
- Significant changes in the intergovernmental system regarding federal, state, and local responsibilities for planning and programming

While many of the CEOs at the Minneapolis workshop indicated that they were comfortable with their organizations’ strategic planning capabilities, there was a consensus that the process often breaks down in the implementation stage. For the purpose of this initial scan, strategic leadership refers is defined as:

“Leading people and organizations through holistic, large scale, fundamental change through very deliberate planning, effective implementation, and carefully focused evaluation in order to assure a high level of performance in the long run”

Both an art and a science, strategic management requires linking numerous management processes to a viable strategic agenda and working toward integration across organizational divisions and levels in order to advance that agenda. As indicated in Figure 1, strategic leadership involves the creation of a strategic agenda, using strategy effectively to drive decisions, building ownership of the strategies throughout the organization, targeting resources to achieve strategic objectives, empowering people to advance the strategic agenda, mobilizing external support for the strategic agenda, and implementing appropriate performance measurement systems to evaluate success. Collectively, these activities formed the scope of inquiry of this initial scan.



The information on innovative practices identified in this research was collected in part through a review of existing literature (see Appendix A), but primarily through interviews with CEOs and other executives in 21 DOTs (Appendix B). In addition, most of those who were interviewed forwarded documents and other materials from their departments which were then reviewed and sometimes prompted additional follow-up interviewing. Those DOTs that were contacted for interviews were identified in the literature, selected on the basis of their participation in the Minneapolis workshop or general reputation in the field, or referred by others who were interviewed along the way.

2. Innovative Practices

The interviews with CEOs and other executives, along with the review of materials sent by many DOTs, served to identify a variety of innovative approaches to strategic leadership and measurement. This report first discusses innovations in strategic planning in DOTs and driving strategy down into organizations through action plans and business plans. It then moves innovative approaches to performance measurement. The report then proceeds to discuss approaches to building internal ownership for the strategic agenda, committing resources to support the strategies, empowering the organization to advance strategic initiatives, and mobilizing external support for the strategic agenda.

CREATING A STRATEGIC AGENDA

All of the DOTs that were contacted in this initial scan have strategic agendas in place, and most, if not all, of them have completed formal strategic planning processes to create these agendas. For the most part these efforts have incorporated the usual components of what has become the “conventional” strategic planning process, i.e. clarification of mission and values, development of a “vision” of success, an environmental scan and assessment of the driving forces behind external threats and opportunities, an analysis of the department’s capabilities and performance and assessment of internal strengths and weaknesses, a SWOT analysis (Strengths and Weaknesses vs. Opportunities and Threats) to identify the strategic issues facing the department, development of overall strategies to resolve these issues, and the creation of action plans and performance measures to provide for implementation and evaluation.

For example, the strategic planning process used by the Virginia Department of Transportation (VDOT) is outlined in a schematic shown in Appendix C. After clarifying its purpose, vision, mission, and values, VDOT conducted a strategic assessment to identify critical issues, and then developed goals and strategies for resolving those issues. The resulting strategic plan for 2000 - 2004 is built around seven goals focusing on customer satisfaction, employee satisfaction and development, maintenance and operations, construction program delivery, technology and research, financial management, and environmental, planning, and regulatory affairs. For each of these areas, the plan presents a set of strategies that VDOT will implement in order to accomplish the goal, and identifies the performance measures that will be used to evaluate its success in achieving that goal. These elements are also illustrated in Appendix C with respect to the goal regarding technology and research.

Balanced Scorecard Approaches

While many DOTs undertake similar analytical steps in their strategic planning processes, however, the resulting plans vary widely in terms of their substantive scope and the content of strategic goals and objectives. One innovative approach along these lines that DOTs have utilized or adapted in recent years is the Balanced Scorecard, or BSC (Kaplan and Norton, 1996). Basically, the BSC leads planners to develop strategies, goals and objectives, and associated performance measures in four different domains or “perspectives” of organizational performance. As originally specified, these include the customer perspective, the financial perspective, the internal process perspective, and the learning and growth perspective.

Within the transportation community, the City of Charlotte, North Carolina, Department of Transportation (CDOT) is perhaps the “pioneer” in using the balanced scorecard approach. In Charlotte, the city council and city manager adopted BSC as a strategic management tool for the entire city government, establishing overall strategic objectives in each of the four perspectives, and they asked the department of transportation to pilot the process at the departmental level. In its own strategic planning process CDOT identified objectives in each of the four perspectives which incorporated or supported several of the citywide objectives, as shown in Appendix D, to assure that departmental objectives were aligned with city council priorities. For each of these objectives, then, CDOT identified “lead measures” representing early signs of success and “lag measures” reflecting the resulting performance or outcomes (also shown in Appendix D).

Recognizing that not all essential activities were tied directly to strategic emphasis areas, CDOT incorporated both “high impact programs” and other “core functions” in its BSC planning process. Responsibilities for each CDOT objective were matrixed across the operating divisions and sections, which were then required to develop their own objectives and performance measures in support of the Department’s overall scorecard. CDOT managers track some of the performance measures quarterly and others on an annual basis. The principal advantages of the balanced scorecard approach are that it encourages a holistic view of strategy and that it enforces a discipline in tying performance measures to objectives and aligning operating level activities with departmental, and even governing body, priorities within each of the four perspectives. CDOT managers feel that the BSC approach has helped not only in developing an appropriate mix of strategic objectives, but also in assuring that ongoing programs and activities throughout the Department are targeted toward achieving those objectives.

Some state DOTs, such as those in Utah and Illinois, have also utilized the balanced scorecard approach. The Texas Department of Transportation has adapted the BSC model by cross-cutting the internal vs. external orientation with a second dimension, process vs. results (Doyle, 1998). This yields a somewhat different set of four perspectives, namely the customer perspective (external results), the partner perspective (external process), the work processes perspective (external process), and the workforce perspective (internal process), as illustrated in Appendix E. Given heightened concerns in the transportation community for managing people as well as managing through partnerships, networks, and stakeholder relations, this particular organizing framework might have appeal for other DOTs.

Stakeholder Involvement

Strategic planning is appropriately seen as a top management responsibility by the DOTs, and in most cases a group consisting of the CEO and 10 to 25 executives takes principal responsibility for this process. Increasingly, however, these executive strategic planning groups are involving more and more managers, and even external stakeholders, in parts of the process along the way. The strategic planning process under way at the Illinois Department of Transportation, for example, is guided by a 13 member executive team which has involved another 30 upper and middle level managers in developing a mission statement, guiding principles, and strategic goals and objectives. At this point, however, a cross-section of approximately 150-160 individuals from throughout the Department are involved in piecing out strategies, action plans, and performance measures. Interestingly, IDOT is using collaborative decision support computer software to help groups resolve issues and arrive at consensus based decisions in carrying out these tasks.

The Maryland State Highway Administration (Md. SHA) invites input from a range of personnel including rank-in-file employees. Working through seven Key Performance Area Councils (for workplace safety, customer service, systems preservation, managing mobility, economic development, environment, and highway safety), the SHA’s 26 senior managers have recently completed the agency’s second strategic plan. As strategies were being developed, these councils worked with “vertical slice teams”, representative groups of managers and employees from up and down the ranks and cutting across various divisions of the organization, to solicit ideas and feedback on proposals. At the operating level, SHA “local” quality councils

worked with their own vertical slice teams to develop business plans within the framework of the overall strategic plan. While this process was time consuming, senior manager believe that it has provided useful input and helped to ensure that employees understand the agency's mission, identify with its goals and objectives, and feel committed to advancing the plan.

Some transportation agencies also involve external stakeholders in their strategic planning processes. In the Maryland SHA, for instance, customer representatives and other external stakeholders attend Key Performance Area Council meetings and provide input into goals and objectives. In an earlier round of strategic planning, the Pennsylvania Department of Transportation (PennDOT) initiated the process with a working conference involving some 100 individuals at an off-site location. Roughly half of the participants were external stakeholders including representatives from local planning agencies, contractors, consultants, and interest groups, who were all involved in developing a vision statement and identifying major goals and objectives. In its more recently completed strategic planning effort, PennDOT's top 15 executives conducted some 60 in-depth interviews with key external stakeholders or partners as a source of input for refining strategic focus areas, high level goals, and strategic objectives.

The Kentucky Transportation Cabinet's strategic plan was updated recently based in part on feedback from some 20 to 30 external stakeholder groups including highway users, truckers' associations, contractors, local planning agencies, and elected officials. Representatives of these groups were interviewed individually and participated in focus groups, providing feedback and expectations that were drivers of the revised strategies. Similarly, the Arkansas Highway and Transportation Department has used a mix of public forums, regional meetings, surveys, focus groups, meetings with MPO representatives, and interviews with elected officials to provide an external stakeholder context as it begins to engage in a formal strategic planning process.

Customer Orientation

One clear finding from the initial scan interviews is that state DOT strategic planning efforts are much more explicitly oriented to customer needs and expectations than they were in the not too distant past. Many departments have accumulated a wealth of information on customer feedback from a variety of sources such as surveys, focus groups, advisory boards, and customer contacts with operating units. While some of these data bases are designed specifically for strategic planning purposes, others have been developed primarily for other uses but can help to frame strategic issues, goals, objectives, and strategies. For example, the Road Rally effort recently completed by the Missouri Department of Transportation, in which panels of motorists were driven on pre-selected samples of state highway and asked to rate their acceptability in terms of ride quality and a variety of other features in order to set standards, was targeted most directly to the development of MoDOT's long range transportation systems plan, but it will also feed into subsequent rounds of the Department's strategic planning as well.

An example of customer feedback geared directly to strategic management is the market segmentation service value study recently completed by the Minnesota Department of Transportation (Mn/DOT) which has created its own internal professional market research unit. This particular study identified seven customer segments (commuters, personal travelers, farmers, emergency vehicle operators, common carriers, shippers by truck only, and intermodal

shippers) and used extensive telephone interviewing to explore the importance of various DOT products and services to them, their satisfaction with these products and services, and their reactions to resource commitments to DOT programs. The results of this survey summarized customer priorities and satisfaction and showed that, with the exception of farmers, these segments are more similar than dissimilar in how they value Mn/DOT products and services. While Mn/DOT's current four strategic objectives were established prior to this strategic market research effort, the results are feeding into the development of directives designed to support these objectives.

As a prelude to its latest round of strategic planning, PennDOT conducted 23 focus group sessions with customers around the state regarding their expectations, satisfaction, preferences, and concerns. The focus groups were designed to amplify the management team's understanding of customers' views that had been gained from a variety of other channels such as (1) a macro level "QUIK" survey of customer views regarding the whole range of PennDOT products and service, (2) an annual county level survey of motorists regarding highway maintenance issues, (3) special purpose surveys focusing, for instance, on highway safety, (4) a set of surveys and other public involvement activities which had been carried out as part of developing the Department's 25 year transportation systems plan, and (5) data coming in from the customer advisory boards which have been formed by most of PennDOT's 67 county maintenance units. The QUIK survey in particular (for Quality, Use, Importance, and Knowledge of services) was instructive in ascertaining customers' priorities for the Department, as illustrated in Appendix F, but all of this information taken together has assured a strong customer focus in PennDOT's strategic plan.

DRIVING DECISIONS

If an agency is serious about advancing a strategic agenda, it must effectively use the plan to drive decisions that are made throughout the organization. In short, it must move into a strategic management mode. This requires tying measurement systems, the budget system, and performance management systems to the strategic plan, as discussed in subsequent sections, but first and foremost it may be a matter of tying lower level planning processes to the overall strategic planning framework. The initial scan found that several DOTs are accomplishing this through annual plans, action plans and business planning processes.

Annual Plans

Following a traditional approach to implementing transportation improvement programs through annual work programs, some DOTs work to accomplish their strategic plans through successive annual plans. The Georgia DOT, for instance, has recently completed its third round of strategic planning. Each year, the strategic planning group reviews the plan and progress to date and then decides how much to "bite off" for the coming year and develops an annual plan to accomplish that portion of the plan. Other DOTs engage in such annual planning to keep their strategic agendas moving forward, often supplemented by action plans and/or lower level business plans.

Action Plans

For example, the New Mexico State Highway and Transportation Department (NMSH&TD) recently completed its first formal strategic plan consisting of 8 general goals (e.g. best roadway surface with available resources, a high quality flexible work force, safety in all aspects of the transportation system, etc.) and numerous supporting objectives. Action plans have then been developed to flesh out the overall strategic plan for each major program or division including construction, maintenance, traffic safety, public transportation, aviation, and program support. For each bureau and section within these program areas, the action plan consists of (1) strategies or objectives, (2) outcomes or results, (3) outputs or actions, (4) efficiency indicators, and (5) quality indicators. Each objective in the action plans is tied to those in NMSH&TD's strategic plan in order to focus operating level efforts on department-wide priorities.

The Wisconsin DOT's strategic plan contains 6 emphasis areas that cut across all divisions and impact on the Department as a whole. Action teams, led by a sponsor who is usually a division director and with representation from throughout the Department, have been created for each of these emphasis areas. Each action team is responsible for identifying, developing, and implementing specific initiatives designed to achieve the objectives set forth in that action item. The sponsor is held accountable for the implementation of these action plans through monthly and quarterly reports to WisDOT's board of directors and the Secretary. The action teams develop status reports, as illustrated in Appendix G, which describe the elements of the action plan along with an indication of which tasks have been completed and which still need to be accomplished. This information is used to evaluate progress in advancing the strategic plan and for establishing new action items that should be undertaken to fulfill needs identified in the emphasis areas.

Business Plans

Several DOTs forge a tighter link between ongoing activities and overall strategy by requiring operating units at various levels to develop more detailed business plans. At WisDOT, for example, while the action plans call for department-wide initiatives cutting across organizational lines, the individual divisions also develop their own business plans which are tied directly to the Department's overall strategic plan. In their business plans, the operating units define in greater detail what they will be doing to contribute to each of WisDOT's emphasis areas. Similarly, the New York State Department of Transportation is experimenting with business planning in some of its engineering regions, asking regional offices to develop what amounts to their own strategic plans within the framework of NYSDOT's overall plan.

Maryland's SHA has recently completed its *Four Year Business Plan 2000 - 2004*, which is actually the product of the agency's second round of strategic planning. At one level, this business plan ties the highway administration to the strategic goals of the overall DOT (which in Maryland consists of a departmental core and several quasi-autonomous modal administrations) as well as gubernatorial initiatives. Then, at a more "local" level, the SHA requires all district and headquarter offices to develop their own business plans to support its overall set of strategies. In turn, as illustrated in Appendix H, these operating level business plans identify key

performance areas, goals, more specific objectives, strategies for accomplishing them, performance measures, and action plans designed to implement the strategies.

At PennDOT, all districts and central office divisions and bureaus are required to develop annual business plans in support of the Department's strategic plan. Managers at several levels receive training in the same five step process which consists of (1) identifying leadership direction, (2) assessing customer expectations, (3) analyzing service capabilities, (4) identifying priority tasks and strategies, and (5) developing plans and performance targets. The resulting business plans are organized according to PennDOT's eight strategic focus areas, in some cases with sponsors and leaders identified for each, and they go into considerable detail. Beyond goals, objectives, strategies, and performance measures, PennDOT's business plans elaborate specific tasks and work programs, and the amounts and sources of funds allocated to these projects. Thus, these business plans provide blueprints for managing PennDOT's core businesses most effectively while targeting efforts to departmental priorities to the fullest extent possible.

MEASURING PERFORMANCE

Whereas DOT information systems traditionally have focused on performance at the program and operating levels, the newer generation of measurement systems are tied directly to overall strategy. For example, the Kentucky Transportation Cabinet's strategic plan contains four major goals, each one elaborated with multiple objectives. Performance measures have been developed to monitor the accomplishment of each of these objectives, and current performance is tracked against previous years in an annual *Path to Progress* report to the Governor. Under the general goal of ensuring mobility and access, for instance, the first stated objective is to preserve the transportation system infrastructure. Eight performance measures have been defined and are monitored annually to evaluate success in pursuing this objective, including a statewide rideability index, district rideability indices, a new pavement rideability index, a measure of pavement preservation needs, the percent structurally deficient bridges, the percent functionally obsolete bridges, a bridge condition measure, and a maintenance program rating. While these indicators are certainly not novel, they are now being monitored collectively for the specific purpose of assessing performance in accomplishing one specific strategic objective.

Measurement Systems as Management Tools

Many DOTs use performance measurement systems more proactively as management tools. The New Mexico State Highway & Transportation Department's *Compass* program is perhaps the prototypical case in point. The *Compass* incorporates 17 customer focused results, and there is at least one performance measure for each results, with a total of 83 measures at present. Wherever possible, the measures have been chosen on the basis of available data in order to minimize the additional burden of data collection as well as facilitate the analysis of trends back over time. However, as weaknesses in some of these indicators have become apparent, the measures have been revised to be more useful. Interestingly, NMSH&TD purposefully did not set numerical objectives to be achieved on the measures, because the

Compass came out of the Department's quality improvement process and the leadership wanted to emphasize the principle of continuous quality improvement rather than meeting targets or quotas.

The 17 results tracked by the *Compass* range from stable letting schedule, adequate funding and prudent management of resources, and timely completion of projects through smooth roads, access to divided highways, and safe transportation systems, to less traffic congestion and pollution, increased transportation alternatives, and economic benefits to the state. These results, along with the performance measures associated with them, are shown in Appendix I. Each result has a "result driver" assigned to it, a higher level manager who is responsible for managing that function and improving performance in that area. Each individual measure also has a "measurement driver," assisted in some cases by an identified measurement team, who is responsible for maintaining the integrity of the data.

The *Compass* was implemented in the Spring of 1996, and for four years it was used as the Department's strategic agenda. NMSH&TD has since developed a formal strategic plan in response to a more recent legislative mandate, with the bureaus and other operating units developing action plans, all tied to *Compass* results and measures. Nevertheless, the top management team still considers the *Compass* as the main driving force and central management tool in the Department, as illustrated in the process model also included in Appendix I. A group of 100 or so departmental managers – the executive team, division directors, district engineers, and mid-management "trailblazers" – meet quarterly to review the *Compass*. They conduct a detailed review of all 83 performance measures to assess how well each area is performing, identify problems and emerging issues, and discuss how to improve performance. Through this process the *Compass* permits NMSH&TD to focus its efforts on delivering tangible products and services to its customers, and since 1996 deficient highways have declined by 28%, pavement smoothness has improved 46%, traffic fatalities have decreased by 15%, and traffic congestion has been reduced by 8%. NMSH&TD executives attribute these results to their ability to manage more strategically through using the *Compass*.

While the Arizona Department of Transportation had a strategic plan on record for years, it was not used to provide direction or control over what the Department did. However, early in 1998 the new executive team – including the director, five assistant directors, and other executive staff – agreed to undertake a comprehensive review of their strategies. The current strategic plan that resulted from this process is "tiered" into five levels, with objectives and performance measures identified for each level that are linked to the Department's overall five strategic goals. In ADOT jargon, "Book 5" is prepared for the Governor's Office every month. It reports on ten objectives and performance measures that support the Governor's strategic initiatives, such as the number of statewide lane miles open to traffic, the highway construction dollars awarded, the number of motor vehicle division transactions processed through the Internet, and the percent of constituent inquiries responded to within 10 days of assigned due dates. For each measure, this report shows actual versus planned or targeted accomplishments, and comment fields are included to provide further interpretation of trends, point out issues relating to the data, and explain variances between actual versus targeted performance.

“Book 4” presents goals, objectives, and performance measures at the assistant director level, showing the extent to which the divisions are supporting overall departmental goals. The ADOT director conducts monthly “operations meetings” with the assistant directors and their direct reports – about 30 people in all, the key players in the Department – to track performance on 16 critical indicators. This is the real strategic management level in ADOT, and these monthly reviews are used to assess progress, identify problems and find solutions, and generally keep departmental performance on track.

“Book 3” tracks the performance of programs as they support division initiatives, and they are reviewed monthly by division directors with their subordinates. Similarly, “Book 2” tracks the performance of organizational units in supporting the programs, and these are the responsibility of program managers. Finally, “Book 1” is used to track the performance of work units, individual teams, or operating units as they support the goals of their parent organizational units. However, a recent assessment showed that the integration of ADOT’s strategic plan below the program level was uneven across the divisions, and they are working to implement a more consistent application of the linking principle through tiers in order to emphasize the responsibilities of work units, teams, and even individuals, within the larger Department’s strategic framework.

Scorecards and Dashboards

Several other DOTs have “cascaded” their strategic planning processes down through various levels in their organizations. PennDOT uses this approach, with districts and central office divisions and bureaus required to develop detailed business plans and performance measures linked to enterprise level strategic plan, as discussed above. Yet, past experience also showed current executives that placing overly strong emphasis on strategic change initiatives could result in inadequate attention being paid to managing core functions, those ongoing sets of basic activities that are essential to deliver products and services to the public. Thus, PennDOT has created a series of “dashboards”, charts that track performance on core functions “at a glance”. The overall dashboard, shown in Appendix J, is prepared monthly for the Strategic Management Committee. It uses color-coded “buttons” to summarize the status of each function, with red signifying functions whose performance is outside acceptable ranges. Additional pages provide much further detail such as breakdowns by district, organizational unit, or components of measures which can help to isolate the source of problems.

In contrast to the dashboard, then, PennDOT has also developed a “Scorecard” of measures that are tied directly to its strategic plan. As shown in the summary sheet also included in Appendix J, the Scorecard identifies a measurement tool for each of the 13 high level goals included in *Moving Pennsylvania Forward*, along with targets for both 2002 and 2005. In many cases the necessary data to operationalize the Scorecard measures are already available. On the other hand, other measures will require the development of new tools such as indicators of traffic delays on selected transportation corridors, measures of sound environmental practices based on ISO 14001 criteria, and a survey of business partners regarding effective business practices.

The major divisions and other organizational units within PennDOT are in the process of developing their own scorecards, tied to their business plans as well as the departmental

scorecard, as has also been done with dashboards. With both sets of measurements, PennDOT is attempting to provide key decision makers with meaningful and digestible information on performance without inundating them with data, adhering to the principle of “lead first, then manage by exception” with hierarchies of measures that delegate items of low importance, high grade, or unlikely risk to lower management levels. Taken together, the complementary scorecards and dashboards allow managers at various levels to focus on PennDOT’s strategic change initiatives while staying on top of how their core functions are performing.

Measuring Outcomes

As is apparent throughout this report, monitoring performance indicators that are tied to strategic goals and objectives has become quite commonplace among state DOTs. Some of these measures concern employees, financial resources, technology, and work processes. These are important, but they focus on outputs, process measures, and quality indicators at earlier stages of production. Others, however, focus on customers, services, and impacts. These are more outcome oriented, but they are often more difficult to measure. Some departments track trends in customer satisfaction through periodic surveys, for example, but most DOTs also directly monitor ride quality, pavement or highway condition, and bridge condition, the kinds of immediate outcomes targeted by strategies to make highway maintenance programs more effective.

Improved highway safety is a critical outcome for most states, and most DOTs monitor a measures in this area as part of their strategic management process, such as numbers of accidents, serious injuries, and fatalities per 100 million vehicle miles traveled, and more specific indicators such as the number of alcohol related fatalities or the number of railroad/highway grade crossing accidents. Some DOT executives have indicated, however, that while they have good outcome measures for highway safety, they are not readily able to connect them back to DOT programs or activities. One interesting approach along these lines is a measure tracked by the Illinois DOT, the estimated number of highway accidents avoided by virtue of safety improvement projects. This estimate is based on analysis of three year accident rates before and after specific highway safety improvement projects completed at targeted high accident locations around the state.

Traffic congestion traditionally has been measured with volume/capacity ratios relating traffic volume on a facility to their carrying capacity based on number of lanes, lane width, shoulder width, curves, grades, etc. For example, the NMSH&TD annually estimates volume/capacity ratios for all roads in New Mexico, and the *Compass* tracks the percentage of roads with high volume/capacity ratios (greater than 1.0 in urban areas and greater than .6 in rural areas). The Idaho Transportation Department uses volume/capacity ratios to monitor congestion in urban areas, but it has concluded that this measure is not particularly appropriate for highways in rural areas with mountainous terrain. Thus, ITD has developed a measure of “no passing opportunities,” which is summarized as the miles of highway without adequate passing opportunities, coded by segments. To operationalize this indicator, ITD engineers have identified miles of two-lane highways with solid stripes (no passing allowed) and then modeled traffic flow over these roads. Through this process they have identified 261 miles of highway that need passing lanes. The Colorado Department of Transportation has been implementing a

new measure developed by the Texas Transportation Institute called the Travel Rate Index (TRI), which simply indicates how much longer it takes to make a trip in congested conditions than during free-flow conditions. While CDOT has been tracking the TRI for the three major urbanized areas in the state over the past several years, it believes that this measure may be more valuable on a corridor basis and is in the process of testing that approach now.

Perhaps the most ambitious attempt to date to develop a comprehensive set of measures of transportation outcomes is the Florida Department of Transportation's Mobility Performance Measures Program. The purpose of these measures is to monitor system-wide performance, provide accountability regarding transportation investments, and link strategic planning to resource allocation. As illustrated in Appendix K, FDOT has identified four dimensions of mobility – accessibility, quantity of travel, quality of travel, and utilization – and then defined multiple performance indicators for each. For example, with respect to highways, quality of travel is measured by average speeds weighted by person miles traveled, average delay, average travel time, average trip time, and maneuverability measured by vehicles per hour per lane.

These measures are operationalized through a combination of actual field data and modeled data, but implementation to date has been uneven. While the guiding concept was to design comparable mobility measures for all transportation modes, not all the requisite data are available, and some of the data that are available are not comparable across modes in terms of time and coverage. Up to this point much of the work has been concentrated on car and truck traffic on various classes of highway, but some of the highway oriented indicators have still not been operationalized. However, FDOT has also been working with local transit authorities to collect the data for the public transit mobility measures, and the intention is to include all modes eventually. Thus, Florida's experience to date reflects both the potential as well as limitations of efforts to monitor changes in statewide transportation system performance.

Measures of the economic or environmental impacts of transportation systems and services are even more elusive, and their inclusion in strategic level measurement systems is sporadic at best. For example, NMSH&TD annually tracks the number of private sector jobs in manufacturing, construction, and transportation in the *Compass*, on the theory that investment decisions in these relatively high wage paying industries often depend in part on the availability and performance of transportation infrastructure. In addition, based on the idea that highway improvements encourage business creation, the *Compass* also tracks the number of licensed business establishments in New Mexico.

Regarding environmental impacts, the *Compass* monitors the highest average readings and the number of exceedances of Environmental Protection Agency and New Mexico air quality standards for both ozone and carbon monoxide. As another example, one indicator included in Mn/DOT's Family of Measures is the number of residents in incorporated areas who are exposed to freeway and expressway noise exceeding established standards. Mn/DOT also tracks the number of wetland acres impacted and replaced by DOT projects. More globally, PennDOT plans to develop a measure of its compliance with ISO 14001 criteria in its Scorecard as an indicator of the extent to which it has integrated environmentally sound practices in its day-to-day operations, but this is more of a process measure than an outcome measure.

BUILDING OWNERSHIP

Implementing performance measurement systems that are tied to strategic goals and objectives, and that have high visibility within a department, also serve to build ownership of these goals and objectives on the part of managers and employees. The CEO of one transportation department said that whenever she visits a district office, for instance, she asks to see their strategic plan and performance measures and reviews their progress in accomplishing strategic objectives. When divisions, operating units, and work groups know that performance is being measured in terms of achieving particular strategic objectives, they tend to identify more with those objectives and to want to “look good” on those measures. In addition, DOTs often break down performance data by districts or other organizational divisions, and as another CEO said: “Such comparisons tend to engender a healthy competition among these units and provides a stronger incentive for them to perform well on the measures”.

Involving broader groups of managers, and even employees, in strategic planning activities, as discussed in an earlier section, also serves to build ownership on their part of the goals, objectives, and strategies that come out of the planning process. And, when DOTs engage districts, divisions, and other units in developing their own business plans within a strategic plan framework, the number of managers and employees who “buy into” the overall strategic goals and objectives tends to multiply accordingly. In addition, some DOTs mount very purposeful communications campaigns – using meetings, retreats, special events, newsletters, and other internal communications vehicles to explain and promote the strategic agenda. Several of the CEOs who were contacted stressed the importance of keeping the strategic agenda “out in front” of the organization and reinforcing the idea that decisions will be guided by mission and strategy as a means of deepening ownership of that strategic agenda.

Assigning Ownership

As mentioned above, some DOTs assign particular individuals as the “owners” of specific strategic goals and objectives, charging them with the principal responsibility for advancing that part of the strategic agenda. For example, “results drivers” and “measurement drivers” are identified for each of the 17 results tracked in NMSH&TD’s *Compass*. Obviously, these high level managers have a vested interest in achieving success in these areas, and they involve their staffs and the appropriate operating units under their direction in placing a high priority on producing the desired results. Similarly, VDOT has assigned a “champion” for each of its seven strategic outcome areas, and WisDOT has identified “sponsors” for each strategic action team.

PennDOT has identified an “owner” and a “leader” for each of its 21 strategic objectives. The “owner” is a deputy secretary or other executive who has overall responsibility for making sure that the objectives are accomplished, while the “leader” is a high level manager who has direct responsibility for implementing the strategies that are intended to make this happen. Whereas the leader “leads the charge”, so to speak, the owner assures that necessary resources are available, provides general support, and runs “organizational interference” when necessary. Thus, both these individuals identify with the strategy and feel a strong stake in the outcome. As

PennDOT extends this process by assigning owners of the business plans developed by the operating units, this kind of ownership is multiplied several times over.

Personal Level Goals and Objectives

Another approach to building ownership for departmental strategies is to incorporate them in the regular performance management process. In the Colorado Department of Transportation, personal goals and objectives are set for each manager and employee, starting at the top. The executive director establishes overall goals for the Department, consistent with mandates from the Governor and the Transportation Commission, and then he negotiates personal goals with each regional engineer and division head. Each of these individuals has a “performance contract” along the lines of a classical “management-by-objectives” or MBO system, stipulating objectives, time frames, and performance measures.

While CDOT managers initially were skeptical of the performance measures, the executive director assured them that they would not suffer personally if the results were below expectations if that were due to factors beyond their control. Now the process extends all the way down to rank-in-file employees, using the annual performance review process to define personal goals and objectives at lower levels. At the operating level these goals and objectives focus on outputs and productivity measures, but at higher levels they focus more on substantive results tied directly to CDOT’s strategic agenda. Through this process all CDOT managers and employees feel a stronger connection to the Department’s overall strategies and have a vested interest in making them successful. DOTs in several other states such as Arizona, Virginia, New Mexico, and Pennsylvania have variants of this kind of system in place and use it to varying degrees to build ownership for their strategic agendas.

Incentive Systems

Finally, some DOTs are experimenting with small financial incentive efforts to motivate employees to focus their efforts on departmental priorities. Building on a Commonwealth program, PennDOT has recently initiated a small cash awards program, with a maximum award of \$1,500 for employees who have provided distinguished performance to the Department. And, one of the bases for an employee to qualify for an award is completing some initiative that is tied to PennDOT’s strategic plan. The Arizona DOT also has incentive systems in which some employees can earn up to an additional \$100 per month – covering some 2,000 out of 5,000 employees – and to some extent they are tied to outputs that are high priorities in ADOT’s strategic plan. While some CEOs contacted in this initial scan advised caution in relying too heavily on such financial incentives as a means of motivating the work force, used judiciously along with other approaches reviewed here they can help build ownership for DOT strategic plans.

TARGETING RESOURCES

Tying budgets to strategic plans to ensure that resources are targeted to strategic initiatives is a critical element for moving an agency into an effective strategic management mode. There are different ways to forge the link between strategic planning and budgeting, but they all require the ability to allocate resources to specific activities that involve strategic initiatives and to connect performance measures to those activities. In the Georgia DOT, as in various other departments, the principal means for doing this is to develop action plans for implementing cross-cutting strategic initiatives and then allocating resources directly to project teams to implement those action plans. In many other DOTs, districts and organizational units develop detailed business plans that flow from the overall strategic plan, and then the Department budgets funds in accordance with these plans.

Activity Based Costing

Tying budget allocations to strategic initiatives, particularly when they cut across organizational lines, is often difficult because the requisite linkages between expenditures and activities is not supported by conventional accounting systems. Activity Based Costing (ABC) systems attempt to assign fully allocated costs to substantive activities, and in some cases tie them to performance measures. For example, the Texas Department of Transportation has implemented an ABC system organized first around five functions including (1) highway systems, (2) aviation, (3) public transportation and gulf intracoastal waterways, (4) administrative management, and (5) support activities. The chart of accounts breaks these functions down further by type of activity in some detail. For instance, highway construction costs are further assigned to such activities as general rehabilitative work, the Texas trunk system, bridges, NAFTA corridors, intelligent transportation systems, urban streets, etc., and these are further segmented by mobility, preservation, and safety.

TxDOT assigns fully allocated costs, including all labor and overhead, and tracks certain performance measures, such as the percent increase in vehicle miles traveled and the cost per lane mile of construction for each of these activities in order to have clearer information on the true costs associated with particular kinds of outputs and initial outcomes. This supports the Department's performance based budgeting system, as discussed below. Mn/DOT has also been experimenting with activity based costing, and linking activity based measurements to these costs, in order to give field managers the tools they need to decide spending priorities, but it is not clear at this point how effective the approach has been.

Results Based Budgeting Systems

As part of a state-wide government process, TxDOT has implemented a results based budgeting process which is intended to link budget allocations to strategies. Its strategic plan consists of 4 very general goals, general objectives identified in support of each goal, and strategies defined for pursuing each objective. For instance, the first goal is "to provide the State of Texas with transportation services and systems," and the first objective listed under that goal is "to develop, operate, and maintain transportation systems and services". Then, a total of 12 strategies are associated with this objective, ranging from highway planning and design, highway

construction, and highway maintenance, through general aviation, public transportation, and ferry operations, to motor vehicle registration and titling, and research.

For the most part these strategies actually represent ongoing functions, and the resulting framework resembles a program budget structure. The real point here is that TxDOT budgets funds to these programs or strategies rather than to organizational units, and that the amounts that are budgeted represent fully allocated costs. In addition, output measures, immediate outcome measures, efficiency measures, and “explanatory” measures reflecting other factors that might influence results are also tracked in connection with each strategy and program budget allocation. This program budget structure allows TxDOT to project the results generated by alternative funding scenarios and to construct more accurate comparisons of the outputs and outcomes that would be produced by different budget allocations across these major strategies or programs.

New Mexico is another state that is moving to results based budgeting. While the *Compass* has been NMSH&TD’s principal strategic management tool, the link between dollar investments and the 17 results tracked by the *Compass* is still missing. The traditional process budgets to organizational divisions, but beginning with the fiscal 2002 NMSH&TD will budget to programs, which sometimes cross organizational lines. Internally, they have already been using the new performance budget, which allows them to tie budgets to action plans and performance measures, and the state legislature will look at the program budget this year for the first time.

While NMSH&TD has action plans going down to the section level (one level below bureaus and districts), the program budget only goes to the bureau level at this point in the central office. District budgets, however, are broken into the major programs on construction, maintenance, and program support. Budgeting funds to support the action plans developed by these units is allowing the Department for the first time to make the connection between resources and performance measures. In the future, NMSH&TD plans to move to an activity based costing model to provide a finer level of accounting data to support the program budget system, and this should facilitate extending it down to the section level.

Another approach to targeting resources more strategically is the Colorado Department of Transportation’s Investment Strategy, which replaced a previous incremental budgeting process focusing on separate programs. The emphasis now is on measuring performance and focusing on tradeoffs among programs in order to provide greater accountability and tie funding decisions to basic purposes. Briefly, CDOT has identified five broad investment categories, including safety, system quality, mobility, program delivery (support functions), and “strategic projects,” which is a “one time” list of 28 high priority highway projects from a statewide perspective, the results of which will show up in the first three categories. All budgeted activities are assigned to one investment category or another, and the categories sometimes cross organizational units.

For example, most highway maintenance activities fall under the system quality investment category, which is concerned with preserving existing infrastructure, but some such as guardrail replacement or traffic line painting are part of the safety category. Similarly, winter maintenance activities are carried out by maintenance forces, but this program is assigned to the

mobility category rather than system quality because its purpose is to facilitate travel rather than maintain infrastructure. CDOT has established department-wide objectives for each investment category and has identified performance measures for these sets of objectives. The intent is to develop five types of measures focusing on productivity, timeliness, results, customer perceptions, and quality of life, in each of the categories. In some cases the measures are in place, such as pavement condition and maintenance levels of service, while others are still under development, and they are being specified for the program and operating levels as well as the investment level.

With the Investment Strategy, CDOT budgets funds to the program structure rather than organizational units, at three levels. First, the investment level focuses on broad goals and performance measures that are of interest to the Transportation Commission and the Legislature. Secondly, at the program level funds are allocated to the major programs within the investment categories, which are the primary responsibility of departmental managers, and finally at the operational level funds are budgeted to the operating units that are responsible for getting the work done. Thus, the Investment Strategy establishes major objectives and priorities for CDOT as a whole, on the basis of current and projected performance levels, and then allocates funds to programs and activities in order to fulfill them.

EMPOWERING THE ORGANIZATION

Beyond driving the planning process down into the organization, building ownership for strategies, and targeting resources to strategic initiatives, the most successful organizations find ways to empower their employees and organizational units to take actions and generally work effectively to advance the strategic agenda. To this end, some DOTs have instituted particular training programs designed to provide employees with skills needed to move certain strategic initiatives forward. Examples include training on process reengineering at WisDOT and training on knowledge management at IDOT. Nevertheless, while many departments have added emphasis on training activities in recent years -- with “transportation universities” being created in Idaho, Pennsylvania, and elsewhere, for example -- many CEOs and other executives indicated that their departments need to think through the connection between their strategic agendas and their training and development programs more carefully.

Beyond training, however, various departments have also moved very purposefully to empower their work forces by moving to more participative management styles and delegating increased decision making authority down to the operating levels. The point here is that once a DOT has been able to generate widespread commitment to strategic goals and objectives, delegating responsibility downward and authorizing organizational units, supervisors, and employees to make more decisions and resolve issues at the operating level enables them to work more effectively to move the strategic agenda forward.

MOBILIZING EXTERNAL SUPPORT

The interviews conducted in this initial scan did not reveal any particularly innovative approaches to mobilizing external support for DOT strategic plans. Clearly, involving external stakeholders in the strategic planning process, as a few states have done, helps to build support within the constituencies they represent. Closer to home, this may begin with the transportation commissions that provide guidance and oversight to many departments. As the executive director of one transportation department stated: “We view the members of our Commission as the first line of external stakeholders, and they tend to be politically well connected. We like to involve them in the Department’s strategic deliberations, because if they endorse the strategic agenda, they will promote it effectively. If they are opposed, however, it will go nowhere.”

Many state legislatures now require agencies to develop and update strategic plans and to report on progress with relevant performance measures. In other states this is mandated by executive orders. Many DOT executives indicated that such performance reports help to strengthen the credibility of their departments and their strategic plans, and that they try to reinforce this by casting all budget presentations, testimony, requests, and other messages to their governor’s offices and legislatures within consistent strategic frameworks. More generally, they spoke about trying to build external support by emphasizing their strategic goals and objectives and reporting on their progress along these lines in meetings, presentations, and other interactions with the full range of external constituencies inside and outside state government.

In New York State, for example, NYSDOT has developed a video that communicates the Department’s values, priorities, and key results areas through employees who describe the kind of work they are engaged in. These employees use language that is consistent with NYSDOT’s strategic plan, focusing on creating value and the importance of customer involvement and their concern with meeting customer expectations. This video, titled “Making a Difference Everyday,” has been distributed to numerous external constituencies including customer groups, contractor and vendor associations, MPOs, and even local school districts as well as all NYSDOT central and regional offices.

3. Conclusions

This initial scan has identified numerous innovative approaches that state DOTs are employing to strengthen their strategic leadership and performance measurement capabilities in an era of unprecedented change. Based on an necessarily “scatter shot” approach, given a limited scope in terms of time and resources, it was by no means intended to produce a comprehensive inventory of DOT activities in these areas. Evaluating some practice as being innovative is subjective in any case, and it is likely that truly innovative practices were not identified even in those DOTs where interviews were conducted. In addition, many other DOTs that could not be contacted may well be utilizing some of the same approaches or other innovative practices of their own.

Not surprisingly, this exploratory research revealed that state DOTs are spread out over the management capacity “performance curve” regard strategic leadership capabilities. To some

degree, at least, capacity is based on experience. While a few DOTs have been engaged in strategic planning for many years and may have completed several rounds of strategic plans, others have just initiated strategic planning processes in the past couple of years. Those departments with more experience in this area have had more opportunities to strengthen their strategic management capacity along the way. A few departments, such as those in Arizona and Pennsylvania, have also found that going through Baldrige type assessment processes has helped to identify weaknesses in their strategic management processes and help improve them.

In sum, it is clear that many state DOTs are taking proactive approaches towards strengthening their management capacity along these lines. It is equally clear that this is an area, not surprisingly, in which “one size does not fit all”. Different agencies are at very different stages in developing their strategic planning capabilities, for example, and while some emphasize performance monitoring systems, others rely more on goal oriented performance management processes or results based budgeting systems, for instance, to provide for effective implementation and evaluation of their strategic agendas. Yet, it is possible to distill some guiding principles from DOT experiences to date regarding the development and use of leading edge strategic management systems. Briefly, the probability of success is heightened by:

- Widespread participation of both internal and external stakeholders in developing strategic plans, performance measurement systems, and other strategic management processes.
- A customer orientation in terms of strategy and priorities, supported by systematic customer feedback and customer oriented performance measures.
- Top management commitment to the strategic agenda and its effective implementation, as demonstrated by the use of planning, decision making, and evaluation processes that flow directly from overall strategy.
- A deliberate pace and frequent reinforcement in implementing strategic planning and management processes, recognizing that it is unlikely to “get it all done in six months” or “get it all right the first time”.
- Ongoing communication to explain strategy, promote it, and report progress in order to building understanding and buy-in on the part of both internal and external stakeholders.
- Emphasis on building “omni-directional alignment” (Kassoff, 2000) between customer concerns and departmental goals, higher level goals and lower level goals, strategic priorities and budget allocations, and strategies and performance measures, etc.

4. Suggested Research

While this initial scan on strategic leadership in state DOTs has found that the state of the practice is indeed advancing, several outstanding issues remain. Further research is needed in a number of areas to help DOTs strengthen and integrate their strategic management practices.

Suggested research projects are overviewed below, in order of priority, and described in greater detail in Appendix L.

Strategic Management in State Transportation Departments: A Survey and Synthesis

While this scan has produced some valuable information, a more comprehensive survey of innovative approaches to strategic management in state DOTs would provide a more complete assessment of the state of the art. This research will build on the initial scan by conducting a mail-out survey to all 50 state DOTs, focusing on strategic planning, business planning, performance management, budgeting, and performance measurement. Based on the results, followup telephone interviews will be conducted with CEOs and/or other executives and managers from all DOTs which were not contacted during the initial scan, while in some cases additional interviews will also be conducted with staff in DOTs that have already been contacted through the scan.

Strategic Management in State Transportation Departments: Comparative Case Studies

This initial scan was necessarily organized on a topical basis, but effective strategic management requires a close alignment among the various elements of the process. Thus, research is needed to explore the strategic management process in greater depth and to learn more about how successful DOTs achieve this kind of alignment. This research will consist of in-depth case studies of four or five selected state DOTs that seem to have developed proactive approaches to strategic management. Rather than rating individual departments, the emphasis of the case studies will be to look for similarities and dissimilarities in approaches among these DOTs, assess the advantages and disadvantages of particular approaches, and learn more about effective approaches in different situational “fits”.

Strategic Planning, Transportation Systems Planning, and Asset Management in State DOTs: A Focus on Interrelationships

State DOTs invest considerable time in developing strategic plans, long range transportation system plans, and asset management programs, but they do not necessarily take steps to ensure true complementarity among them. Inconsistencies among these three processes could be problematic, and research is needed to explore how DOTs can best manage the interrelationships among them. This project will be conducted through a mail-out survey to all 50 state DOTs, followed by telephone interviews and a review of documents from selected states.

Transportation Outcomes and Other Impact Measures: A Synthesis of Best Practices and Current Research

State DOTs have been implementing management systems and performance measures that are much more results oriented than in the past. Yet, many departments are struggling to develop measures of the kinds of results that are really the most important: transportation outcomes and associated economic and environmental impacts. Research is therefore needed to identify best practices along these lines as well as to examine leading edge research in this area

and its utility to state transportation departments. This research project will utilize a mail-out survey of all 50 DOTs and followup interviews with staff in selected states to identify the performance measures they use, for either strategic management or long range system planning, to assess transportation, economic development, and environmental impacts. In addition, an extensive literature review will be conducted, looking at the results of research in the U.S. and other countries, to learn more about alternative approaches to outcomes measurement that might be useful for DOTs.

Sustaining and Adapting strategic Management Processes Through Transitions of Administrations

Public agencies sometimes find themselves in disarray in terms of strategic direction or the process of strategic management itself due to changes in gubernatorial administrations and/or top leadership in the department. Some DOTs have been more successful than others in navigating such transitions, even renewing themselves and maintaining their strategic capacity for change as needed to ensure continued high levels of service to the public. However, the formulas for success along these lines have not been codified. In this research, five to seven DOTs will be selected for case studies, including departments that have successfully negotiated administrative transitions as well as some that have had difficulty in doing so, in an effort to learn as much as possible about the factors, conditions, and specific approaches that facilitate effective transitions.

Effective Communications Strategies for Promoting Strategic Plans

During the course of this initial scan, several CEOs indicated that they felt a need for more effective communications strategies for promoting their strategic plans to managers and employees in their organizations as well as to external stakeholders. Beginning with a review of literature on managerial communications across organizations and sectors, this research will be conducted through a mail-out survey of all 50 state DOTs and proceed with followup telephone interviewing with officials in selected departments. This work will focus on communication venues and media, as well as message content and intended audiences, to identify effective strategies for communicating in order to promote strategic plans.

Obtaining Customer Input on Needs and Satisfaction

CEOs have articulated two important aspects of customer based information that they need: (1) users' satisfaction with current services and products, and (2) customers' needs and preferences for services, and the importance to them of various services that DOTs are or could be providing. Thus, research is needed to build on NCHRP's 20-24 (10) *Customer Based Quality in Transportation* to identify best practices in obtaining customer feedback as well as the most appropriate matches between solicitation techniques and managerial uses. This research will utilize a mail-out survey of all 50 state DOTs along with followup interviews with managers in several states to learn more about how they implement a wide variety of techniques to solicit customer feedback and how they use the resulting data to improve performance.

Appendix A

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Appendix A

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Appendix B

DOT Interviews Conducted

Appendix B

State DOT Personnel Interviewed

Arizona Department of Transportation

Mary Peters, Director

David P. Jankofsky, Manager of Strategic Planning & Budgeting

Arkansas State Highway and Transportation Department

Bob Walters, Chief Engineer

City of Charlotte, N.C. Department of Transportation

George T. Lathrop, Deputy Director

Colorado Department of Transportation

Thomas E. Norton, Executive Director

Jennifer Finch, Director, Division of Transportation Development

Florida Department of Transportation

Thomas F. Barry, Jr., Secretary

Robert Romig, Director, Office of Policy Planning

**Daniel Cashin, Performance Monitoring Coordinator,
Office of Policy Planning**

Georgia Department of Transportation

Frank Danchetz, Chief Engineer

Paul Mullins, Director of Planning and Programming

Idaho Transportation Department

Dwight M. Bower, Director

Illinois Department of Transportation

Rob Newbold, Deputy Secretary

John Webber, Assistant to the Secretary

Richard A. Meyers, Director Division of Traffic Safety

Kansas Department of Transportation

William E. Watts, P.E.

Chief - Office of Management and Budget

Kentucky Transportation Cabinet

E. Jeff Mosley, Deputy Secretary of Administration

Chuck Knowles, Director of Operations, Office of Construction and Operations

Maryland State Highway Administration

Parker F. Williams, Administrator

Minnesota Department of Transportation

Elwyn Tinklenberg, Commissioner

David Eckern, Assistant Commissioner

Mark C. Larson, Director of Measurement & Evaluation

Karla Rains, Director of Market Research

New Jersey Department of Transportation

William S. Beetle, Director, Transportation Systems Planning

New York State Department of Transportation

Richard Albertin, Director, Resource and Risk Management, Office of the Commissioner

Jay Hagle, Program Research Specialist III, Bureau of Resource and Risk Management,

John J. Shufon, Director, Data Analysis and Forecasting Section, Planning and Strategy Group

New Mexico State Highway & Transportation Department

Tom Church, Chief, Quality Management Program

Pennsylvania Department of Transportation

Bradley L. Mallory, Secretary

Larry M. King, Deputy Secretary for Planning

David Margolis, Director, Bureau of Fiscal Management

South Dakota Department of Transportation

David Huff, Manager of the Office of Research

Texas Department of Transportation

Ronald Hagquist – Planner III, Special Studies Group, Administration

Utah Department of Transportation

Neal F. Christensen, Director of Administrative Services

Virginia Department of Transportation

Connie Sorrell, Assistant Commissioner for Administration

Wisconsin Department of Transportation

Ernie Wittwer, Director of the Midwest Regional University Transportation Center

James S. Etmanczyk, Quality Director

Appendix C

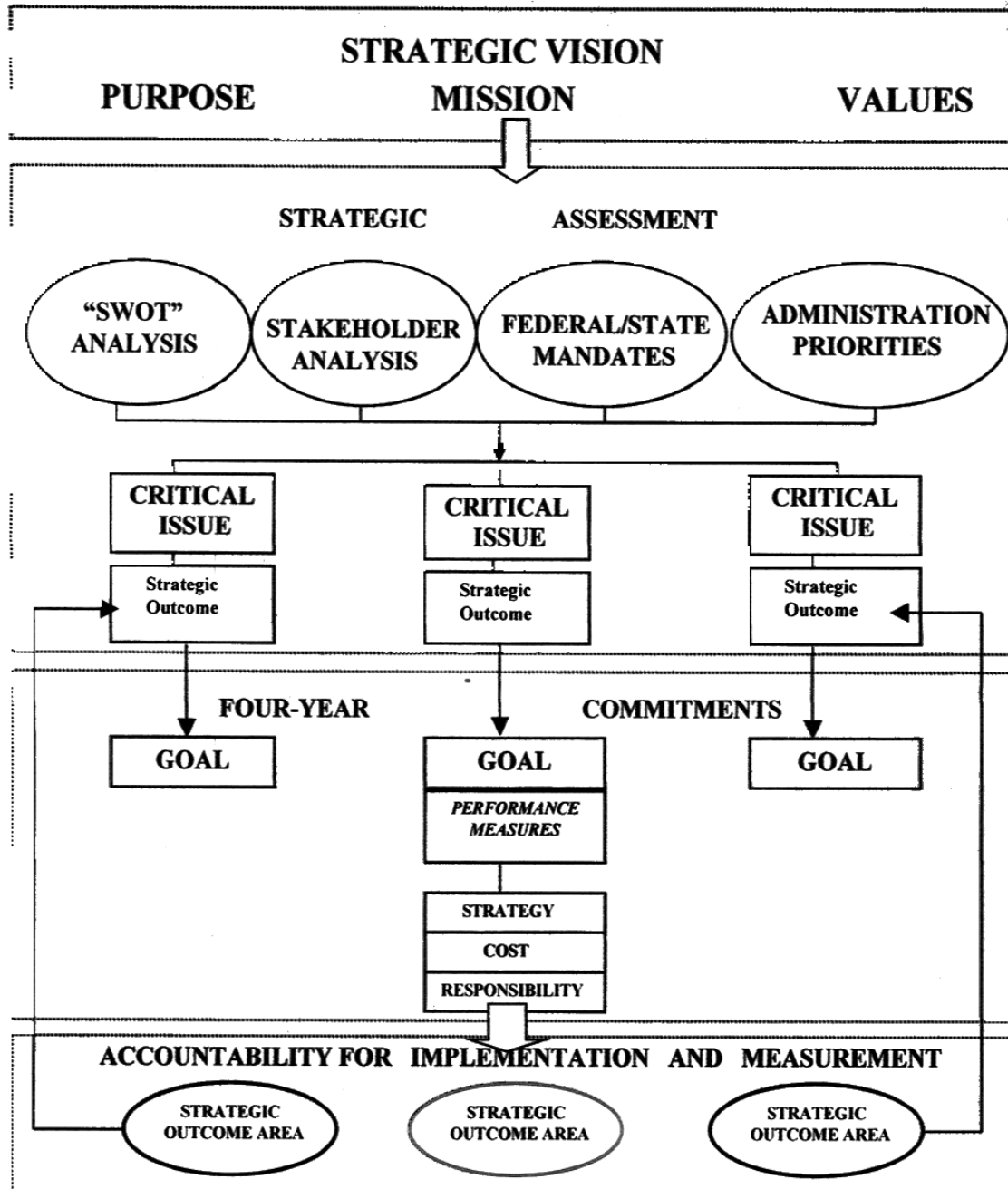
Virginia Department of Transportation:

**Strategic Planning Process
and
Sample Goal and Strategies**

VIRGINIA DEPARTMENT OF TRANSPORTATION

STRATEGIC PLANNING PROCESS

- VDOT followed the process shown below in examining its existing Strategic Plan, the components of which will be explained further in later sections of this document:



VIRGINIA DEPARTMENT OF TRANSPORTATION

STRATEGIC OUTCOME AREA: TECHNOLOGY AND RESEARCH

Champion: Assistant Commissioner for Research and Technology
Goal # 5: By 2002, VDOT will improve its use of new information management and engineering technologies.

Critical Issue(s) Addressed:

Increasing demands for technology to address transportation needs

Rationale for Goal # 5:

VDOT understands that new technologies provide enabling capabilities to meet other goals and that future success of critical initiatives depends greatly on VDOT's ability to leverage technology – whether it is information-based, new paving compounds, automation, or intelligent transportation systems. As such, the goal reflects the need for continuous improvement in the use of new technologies, and the performance measures identified generally support the ability to determine if business needs are being addressed.

Performance Measures for Goal # 5:

1. Statistically significant reduction in variance between planned versus actual return on investment (ROI) on all proposed projects.
2. Increase level of customer satisfaction with technology deployments among internal and external customers.
3. The number of new ideas/technologies that are formally approved for further exploration.
4. Complete all projects within a defined variance of projected vs. actual resource commitments.
5. Complete all projects within a defined variance of projected vs. actual schedules.

VIRGINIA DEPARTMENT OF TRANSPORTATION

Strategies for Goal # 5:

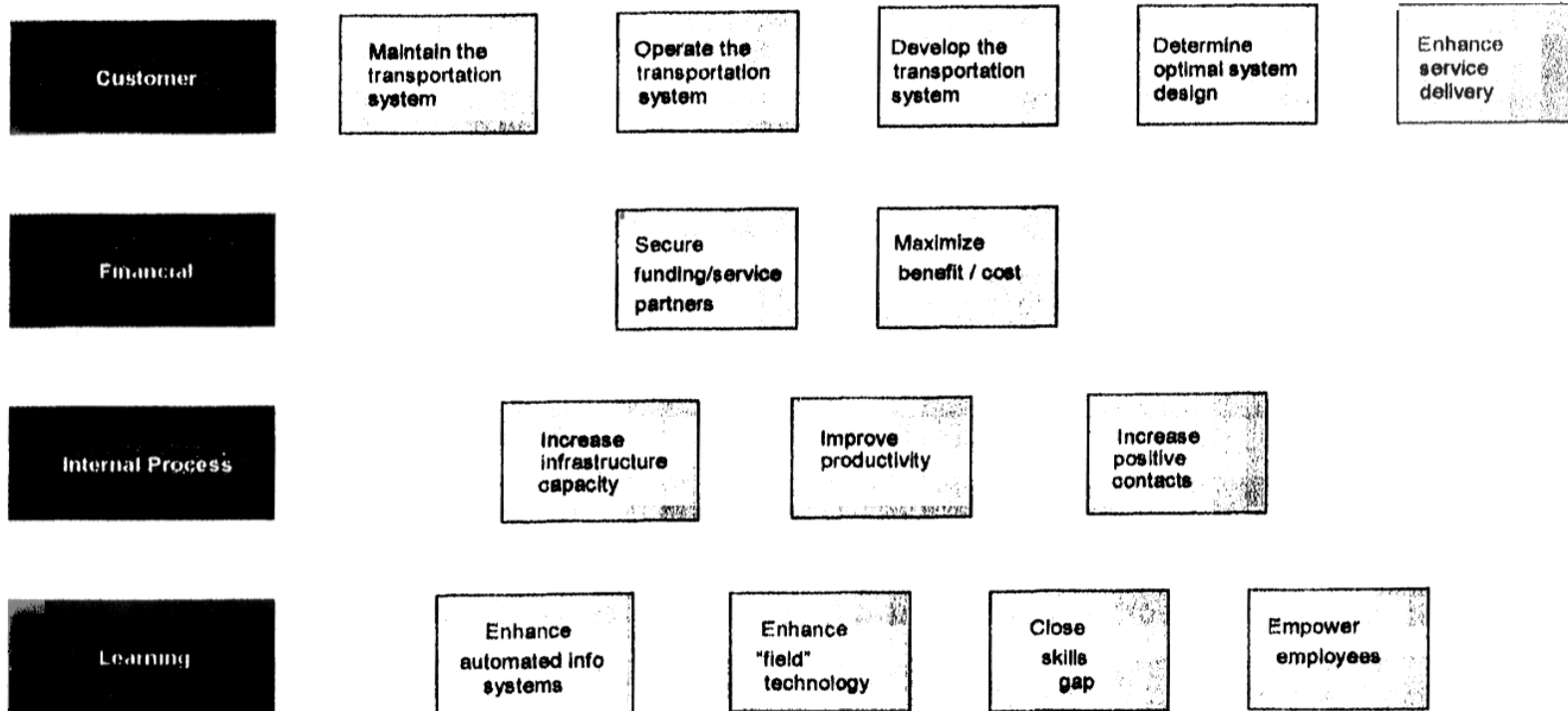
1. The Technology and Information Management Steering Committee (TIMSC) will establish a baseline variance for planned vs. actual ROI and determine the agency's targets.
2. The Technology and Information Management Steering Committee (TIMSC) will develop a Strategic Technology Plan (STP) by 9/99 that is in accordance with VDOT goals and identifies baseline priorities for information systems (IS) and technology development.
3. Project sponsor will conduct/update cost-benefit analysis for each automated system before the project is started and after 1 year of operation.
4. The Data Management Program will provide project management training to each information technology and business lead for each automated system before project initiation.
5. The Assistant Commissioner of Planning, Research, and Technology will ensure the development and implementation of research plans for applying emerging transportation technologies other than information technologies.
6. The Data Management Program will continue development of a data warehouse to provide centralized access to information needed by the Department.
7. The Intelligent Transportation System and Business Application Systems Program and the Research and Innovation in Technology Program will develop opportunities for public-private partnerships to further integrate technology into the transportation systems.
8. The Business Application Systems Program will develop a process for maintaining a prioritized listing of technology and information management initiatives under consideration by the department.
9. The Internet Commerce Program will develop web-based applications to make business transactions faster, more reliable, and more cost-effective for internal and external customers.

Appendix D

Charlotte Department of Transportation:

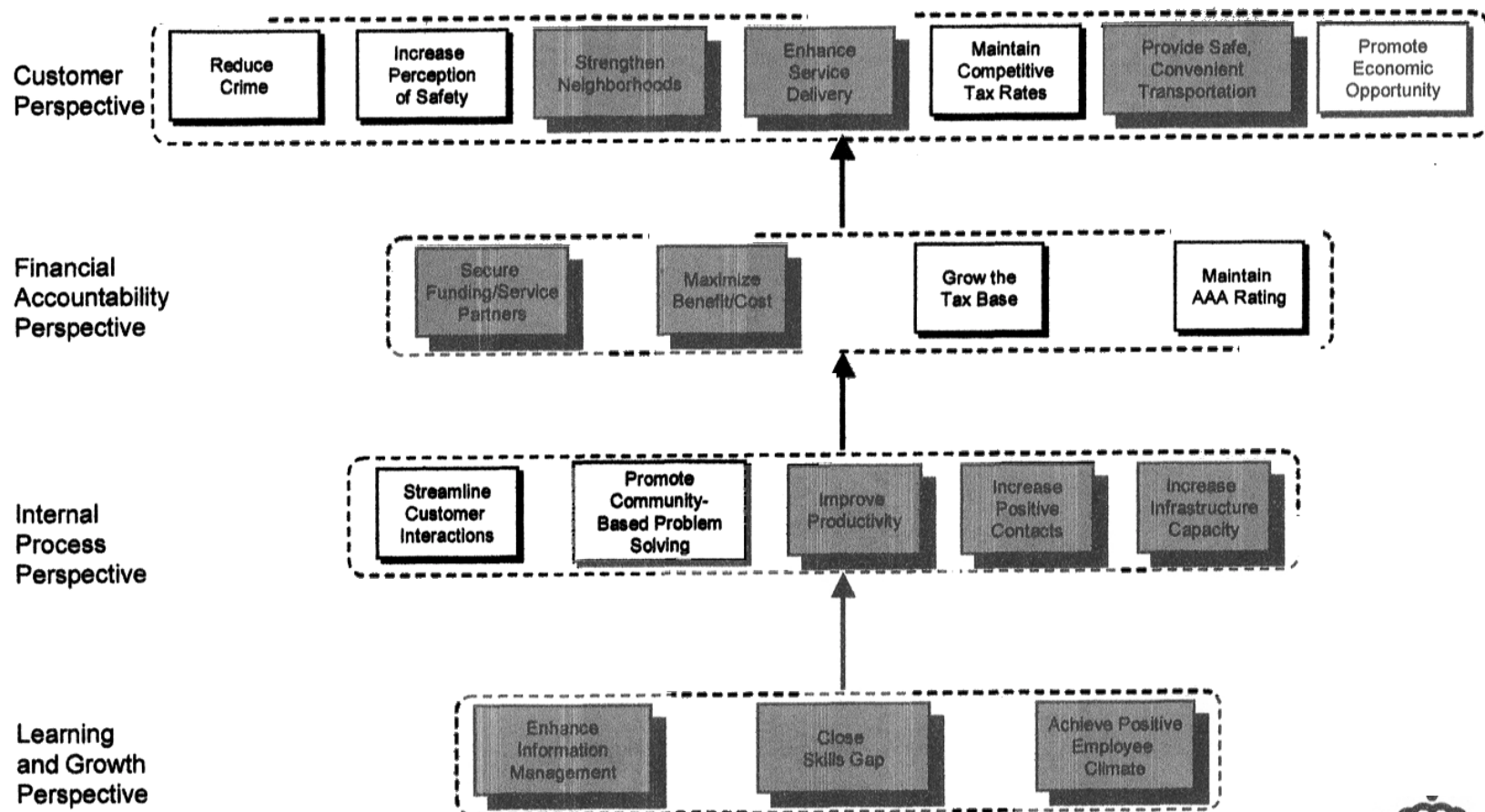
Balanced Scorecard Approach

CDOT Balanced Scorecard Objectives



Perspective	Objective	Lead Measure	Lag Measure
Customer	C-1 Maintain the transportation system C-2 Operate the transportation system C-3 Develop the transportation system C-4 Determine the optimal system design C-5 Improve service quality	C-1 Repair Response: repair response action C-1 Travel Speed: average travel speed by facility and selected location C-2 Commute Time: average commute time on selected roads C-2 On-Time Buses: public transit on-time C-3 Programs Introduced: newly introduced programs, pilots, or program specifications C-5 Responsiveness: % of citizen complaints and requests resolved at the CDOT level	C-1 High Quality Streets: condition of lane miles \geq 90 rating C-2 Safety: city-wide accident rate; no. of high accident locations C-3 Basic Mobility: availability of public transit C-4 Plan Progress: % complete on 2015 Transportation Plan
Financial	F-1 Expand non-City funding F-2 Maximize benefit / cost	F-2 Costs: costs compared to other municipalities and private sector competition	F-1 Funding Leverage: dollar value from non-City sources F-1 New Funding Sources: dollar value from sources not previously available
Internal Process	I-1 Gain infrastructure capacity I-2 Secure funding/service partners I-3 Improve productivity I-4 Increase positive contacts with Community	I-1 Capital Investment: \$ allocated to capital projects in targeted areas I-2 Leverage funding/service partners: new funding/resource partners identified I-3 Cost per Unit: cost per unit I-3 Competitive Sourcing: % of Budget bid I-3 Problem Identification: source & action I-4 Customer Communications: no., type, freq.	I-1 Capacity Ratios: incremental capacity built vs. required by 2015 Plan I-2 No. of Partners: number of partners I-3 Street Maintenance Cost: cost/lane mi. I-3 Transit Passenger Cost: cost/passenger I-4 Customer Surveys: survey results concerning service quality
Learning	L-1 Enhance automated information systems L-2 Enhance "field" technology L-3 Close the skills gap L-4 Empower employees	L-1 IT Infrastructure: complete relational database across CDOT L-3 Skills Identified: key skills identified in strategic functions L-4 Employee Climate Survey: results of employee survey	L-1 Information Access: strategic information available vs. user requirements L-2 Information Tools: strategic tools available vs. user requirements L-3 Skills Transfer: skill evidence in task or job performance L-4 Employee Goal Alignment: training / career development aligned with Mission

City's Corporate Level Balanced Scorecard

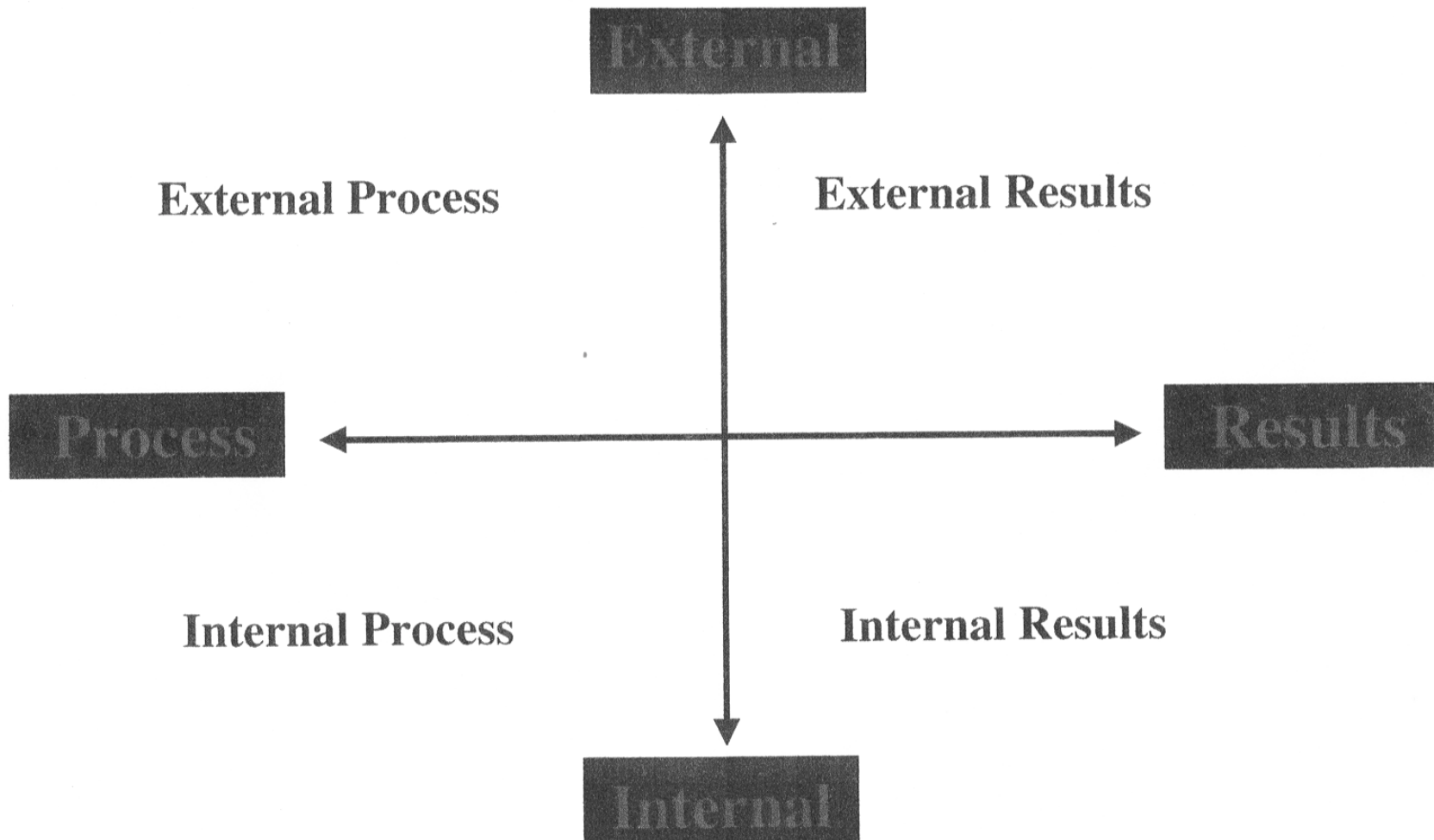


Appendix E

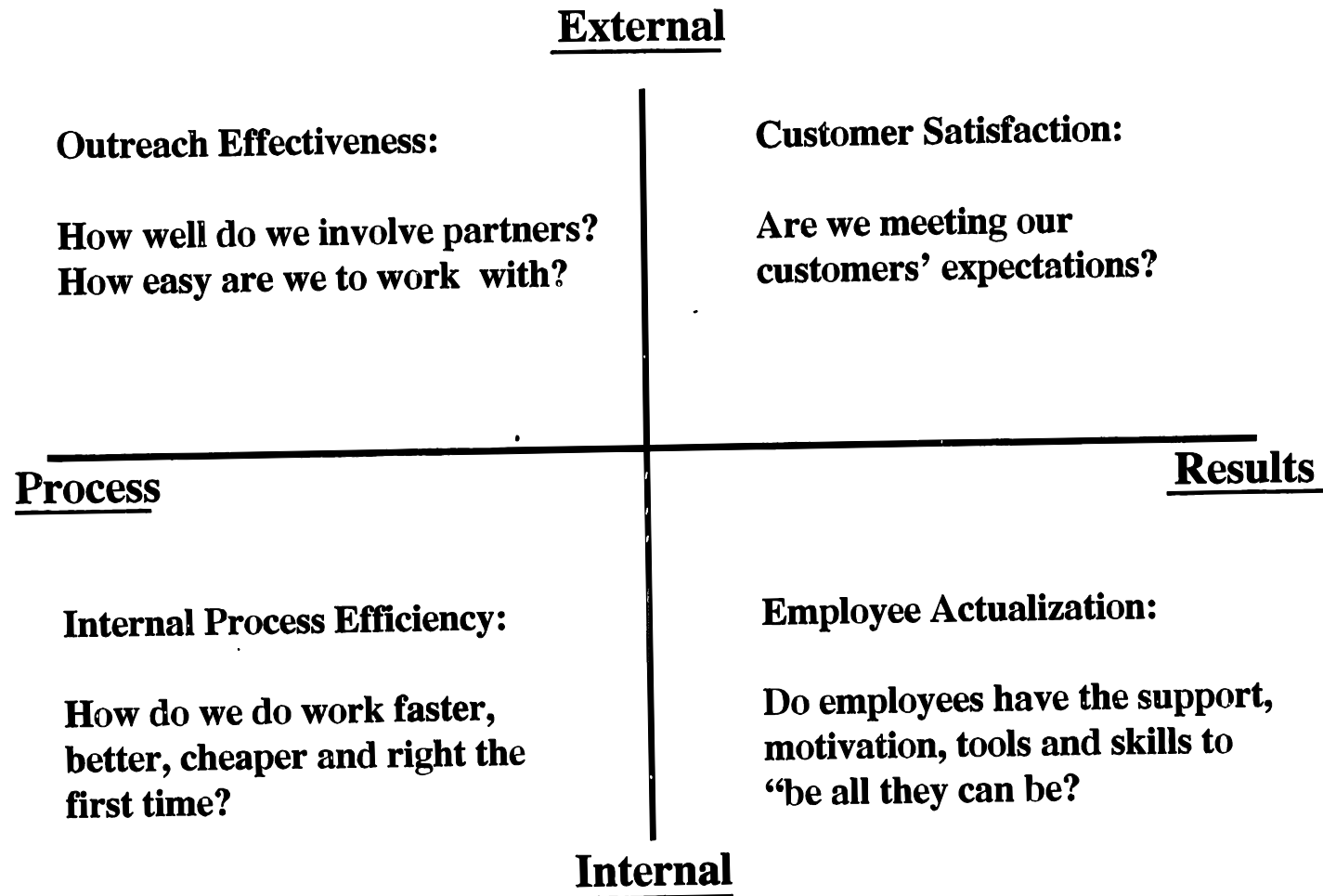
Texas Department of Transportation:

Balanced Scorecard Approach

Organizational Directions - TxDOT's Balanced Scorecard



Source: Performance Measurement at the Texas Department of Transportation



TxDOT's balanced scorecard framework.

Source: Performance Measurement at the Texas Department of Transportation

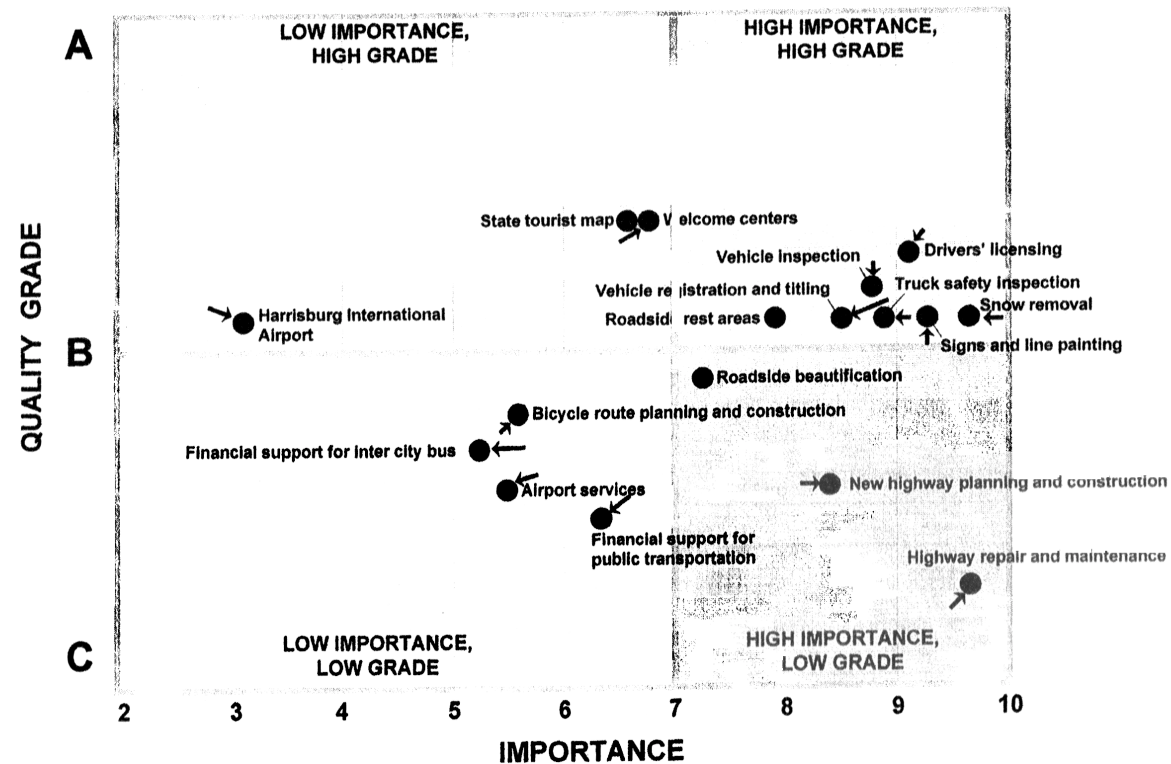
Appendix F

Pennsylvania Department of Transportation:

QUIK Survey Results

PENNDOT SERVICES IMPORTANCE/QUALITY MATRIX

Includes Items asked in both QUIK95 and QUIK97 for which more than 30 people gave a grade
 RED ARROWS INDICATE CHANGE FROM QUIK95



Appendix G

Wisconsin Department of Transportation:

Sample Action Team Status Reports

WisDOT Action Team Status Report

TEAM NAME	WHAT IT SET OUT TO DO	WHAT IT HAS DONE	WHAT IT STILL NEEDS TO DO
<p>Foster a comprehensive view of transportation needs</p> <p>Sponsor: Mike Cass</p>	<p>Project Rationale: A comprehensive view of transportation means different things to different employees. The purpose of this team is to synthesize the information that has been written, discussed and shared on this subject in order to establish one definition or concept of what it means to have and implement a comprehensive view of transportation.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Ensure that all employees should have a broad view of the breadth of the responsibilities of the department. 2. Enhance employees' understanding of their role in creating transportation solutions through innovation and exceptional service. 3. Achieve consistency in communication and application of a comprehensive view of transportation. 4. Define and communicate what "a comprehensive view of transportation" means in order to assist employees in individually and collectively carrying out the objectives of the definition. 5. Identify actions necessary to achieve a comprehensive view. 	<ul style="list-style-type: none"> • Identified and defined the components of a comprehensive view of transportation, such as WisDOT's multi-modal emphasis, the involvement of stakeholders, promotion of safety and use of latest technologies. • Highlighted current WisDOT policies as they apply to highways, rail, aviation, waterways, bicycles, pedestrians, transit, economic development and land use. • Described the inter-relationships between WisDOT divisions • Considered barriers that may hinder WisDOT's ability to achieve a comprehensive view of transportation including limited resources, legislative challenges and communication with internal and external audiences • Suggested a variety of communication tools to convey the comprehensive view of transportation, including pamphlets, a web page, video, traveling display boards, WisDOT Bulletin, presentation kit, staff meetings and training course. <p>Measure of success: A multi-divisional team has more clearly defined what a comprehensive view of transportation means for the department; identified specific examples related to all divisions where we are currently promoting a comprehensive transportation system; and highlighted barriers that need to be overcome to fully achieve a comprehensive view of transportation.</p>	<ul style="list-style-type: none"> • Obtain Board approval of the comprehensive view of transportation developed by the team. • Use the communication tools to convey WisDOT's comprehensive view of transportation.

WisDOT Action Team Status Report

TEAM NAME	WHAT IT SET OUT TO DO	WHAT IT HAS DONE	WHAT IT STILL NEEDS TO DO
<p>Strengthen partnerships</p> <p>Sponsor: Bob Cook</p>	<p>Project Rationale: The department's ability to successfully reach its goals is dependent upon the support of the legislature. Feedback from legislators indicate the department can do a better job to enhance relationships and build trust with legislators.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Develop and implement an outreach plan aimed at establishing better relationships and trust with legislators and key legislative staff. 2. Include actions in the plan relating to internal communications, communication with the legislature and key performance measures. 	<ul style="list-style-type: none"> • Broadened the focus of the group to include federal legislative activities. Merged state and federal legislative committees to improve coordination. • Developed an outreach plan that included external and internal outreach activities. <ul style="list-style-type: none"> ⇒ Prepared various resource materials – rolodex cards of leg com members, directories on dotnet and improved federal dotnet site, legislative reference cards by district ⇒ Encouraged use of PCRs for legislative contacts through Bulletin articles/meetings ⇒ List of field trips developed; several trips organized (ie; tour of DMV and SE freeways) ⇒ Enhanced presence at hearings and more visits ⇒ Broader content for district legislative briefings (TPC and Trans 233) ⇒ Congressional briefing on highway financing • Developed legislative priority list for 1999-2000 session. Achieved passage of several bills on the list. • Held a DOT/DNR summit to improve coordination between the agencies. <p>Measure of success: WisDOT managed to get numerous technical bills and other law changes important to us passed, despite a difficult legislative session. An effective process and enhanced one-on-one visits with legislators helped WisDOT achieve this success.</p>	<ul style="list-style-type: none"> • Ongoing visits, field trips, presentations and resource material. • Update PR segment of Facilities Development Manual. • Establish legislative priority list for 2001-2002 session. • Complete video and training session on legislative relations.

Appendix H

Maryland Department of Transportation:

**Excerpts from the Office of Real Estate's
Business Plan**



Business Plan 2000

Maryland Department of Transportation
State Highway Administration

Contents for Business Plan:

- ✓ Our Mission and Key Performance Areas
- ✓ Our Goals
- ✓ Our Objectives
- ✓ Our Strategies
- ✓ Our Action Plans

ORE MISSION STATEMENT

To acquire real estate and provide real estate services for the State Highway Administration and other Maryland Department of Transportation (and State) projects in a timely, cost-effective, and customer-oriented manner.

WE WILL FULFILL OUR MISSION BY FOCUSING ON THE FOLLOWING KEY PERFORMANCE AREAS and GOALS:

Acquisition Services: To provide acquisition services for our customers on a Statewide basis.

Asset Management: To manage SHA's real estate assets and records.

Customer Service: To meet the needs of our customers in an efficient manner.

Project Management: To monitor project progress to ensure proper disposition of the cases/projects.

Division/Section: Property Review Division

Date: 4-11-00

Key Performance Area(s): Acquisition Services

Goal: To provide acquisition services for our customers on a Statewide basis.

Objective #1: Increase the efficiency of the acquisition review process by 12-31-00

Strategy #1: Identify the existing Property Review Division's internal review process.

Performance Measures: Output: Time comparison between old and modified review process.

Outcome: A more efficient review process and better documentation of the option review process.

Action Plan		Persons Responsible	Time Table	Status
1.	List the steps of the option assembly review process.	Property Review Staff	12-31-99	
2.	Determine which staff member is responsible for each step.	Property Review Staff	12-31-99	
3.	Determine whether each step is necessary to the process.	Property Review Staff	12-31-99	
4.	Measure the time that each step requires.	Property Review Staff	6-30-00	
5.				
6.				
7.				

Division/Section: Property Review Division

Date: 4-11-00

Key Performance Area(s): Acquisition Services

Goal: To provide acquisition services for our customers on a Statewide basis.

Objective #1: Increase the efficiency of the acquisition review process by 12-31-00

Strategy #2: Analyze the Option Review process.

Performance Measures: **Output:** Time comparison between old and modified review process.

Outcome: A more efficient review process and better documentation of the option review process.

Action Plan		Persons Responsible	Time Table	Status
1.	Determine the correct order of the steps to be performed.	Property Review Staff	12-31-99	
2.	Identify the correct person to perform each review step.	Property Review Staff	12-31-99	
3.	Identify large time consumers.	Richard Klug	6-30-00	
4.	Determine the time that each step should take	Richard Klug	6-30-00	
5.				
6.				

Division/Section: Property Review Division

Date: 4-11-00

Key Performance Area(s): Acquisition Services

Goal: To provide acquisition services for our customers on a Statewide basis.

Objective #1: Increase the efficiency of the acquisition review process by 12-31-00

Strategy #3: Modify the option assembly review process.

Performance Measures: **Output:** Time comparison between old and modified review process.

Outcome: A more efficient review process and better documentation of the option review process.

Action Plan		Persons Responsible	Time Table	Status
1.	Change sequence of review steps in accordance with Strategy #2, Action #1.	Richard Klug	6-30-00	
2.	Change review assignments within Property Review, if necessary, in accordance with Strategy #2, Action #2.	Richard Klug	6-30-00	
3.	Commit additional resources to reduce/correct internal time consumers.	Richard Klug	6-30-00	
4.				
5.				

Division/Section: Property Review Division

Date: 4-11-00

Key Performance Area(s): Acquisition Services

Goal: To provide acquisition services for our customers on a Statewide basis.

Objective #1: Increase the efficiency of the acquisition review process by 12-31-00

Strategy #4: Implement the modified option assembly review process.

Performance Measures: Output: Time comparison between old and modified review process.

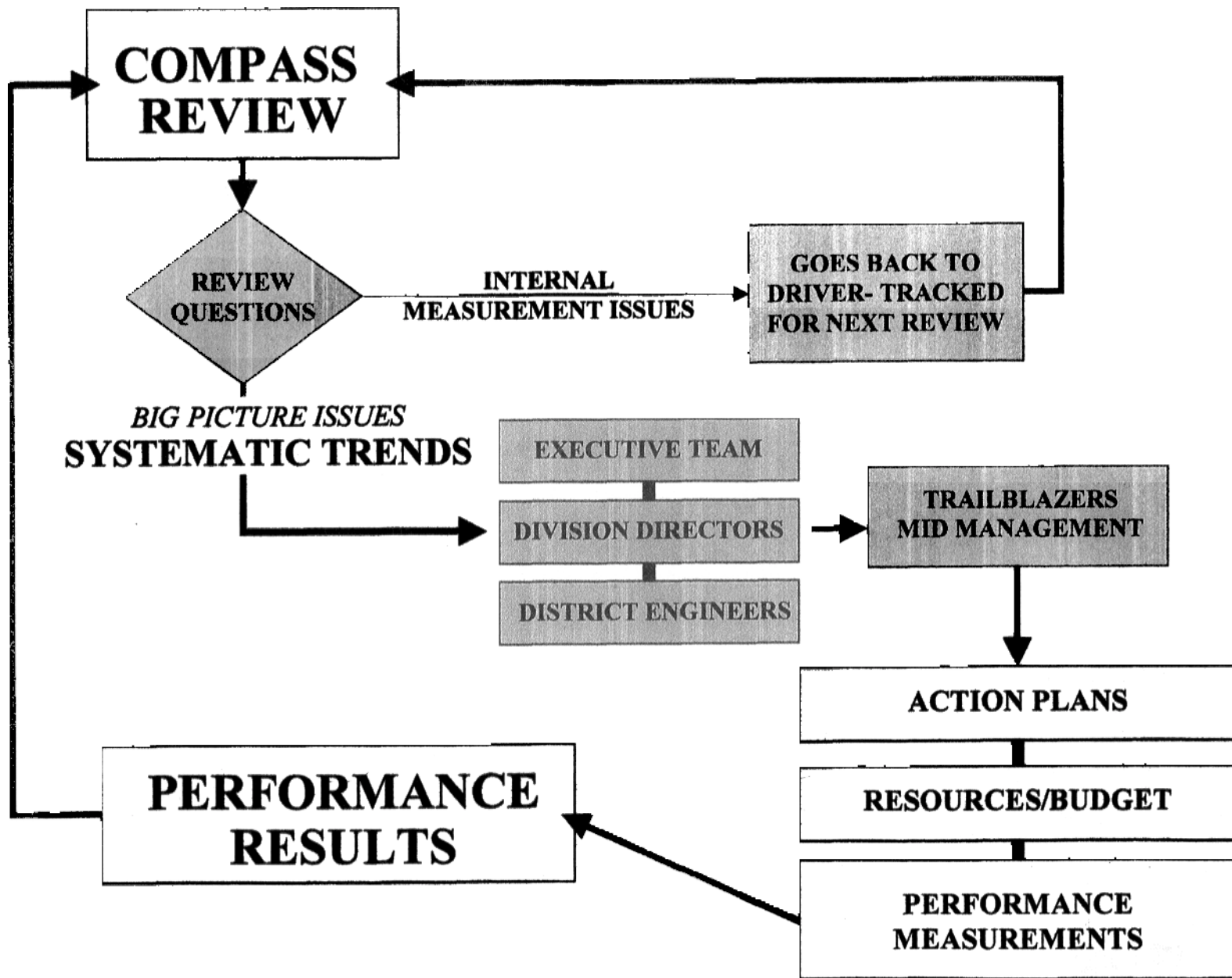
Outcome: A more efficient review process and better documentation of the option review process.

Action Plan		Persons Responsible	Time Table	Status
1.	Perform option reviews using modified review process.	Property Review Staff	12-31-00	
2.	Perform option reviews using modified review assignments, if applicable.	Property Review Staff	12-31-00	
3.	Measure time that each modified review step requires.	Property Review Staff	12-31-00	
4.				
5.				
6.				

Appendix I

**New Mexico State Highway & Transportation
Department:**

COMPASS Measures



Results and Measurements

1	Smooth roads to provide safe, efficient travel	Adolfo Lucero, Charlie Trujillo
1a	Ride Quality Index for Interstates and non-Interstates	Tito Medina
1b	Project Profilograph for new construction	John Tenison
2	Safe transportation system-reduction in vehicle crashes	Chip Fenner
2a	Fatalities per 100 million vehicle miles traveled (mvm)	Virginia Jaramillo
2b	Serious injuries per 100 mvm	Virginia Jaramillo
	Alcohol involved fatalities	↓
2d	Alcohol involved fatalities per 100 mvm	↓
2e	Alcohol involved fatalities, per 100,000 population	
2f	Alcohol related fatalities to total fatalities	
2g	Run-off-road crashes per 100 mvm	
2h	Head-on crashes per 100 mvm	
2i	Seat belt use by the public	
2j	General and Auto liability claims and insurance premiums	
	Statewide Rural Crashes Involving Heavy Vehicles	↑
2l	Railroad/Highway Grade Crossing Accident 1999	Fred Friedman
3	Access to divided highways	Charlie Trujillo
3a	Divided highway miles in good condition	Ray Alexander
3b	Incorporated areas served by divided highways	Ray Alexander
4	Intermodal facilities	Richard Montoya
4a	Number of intermodal facilities	Richard Montoya
	Rail freight tonnage originating in NM *	
	Rail freight tonnage terminating in NM	
4d	Air freight tonnage enplaned and deplaned	
4e	Airport improvement projects	Mike Rice
5	Adequate funding and prudent management of resources	Rhonda Faught
5a	Expenditures privatized	Ron Baca
	System-wide highway miles by condition	
	Six year STIP funding compared to needs	
5d	Projects finalized within 120 days of acceptance	
5e	Ratio of operations to administration budget	
5f	Ratio of construction to maintenance budget	Chris Ortega
5g	Recovered property damage claims	Art Gottlieb
5h	Bridge replacement: deck area and costs	Jim Camp
5i	Time from Completion of Projects to Final Acceptance by the District	Lee Onstott
6	Less traffic congestion and pollution	Richard Montoya
6a	Percentage of roads with a high volume/capacity ratio	Richard Montoya
6b	Highest average readings of EPA air quality standards	Richard Montoya

Results and Measurements

7	Maintenance of highways and facilities	Adolfo Lucero
7a	NM Clean & Beautiful grant program	Kathie Leyendecker
7b	Miles in Adopt a Highway Program	Kathie Leyendecker
7c	Department and inmate hours of litter pick up	Ernie Archuleta
7d	Department hours of graffiti removal	Ernie Archuleta
7e	Permanent road signs added or upgraded	Ernie Archuleta
7f	Customer satisfaction at rest areas	Ernie Archuleta
7g	Claims due to livestock on roadway	Randy Baca
8	Improved communication, external	Kathie Leyendecker
8a	Media coverage	Kathie Leyendecker
8b	Public involvement with the project development process	Judith James
8c	Environmental Responsibility	Judith James
8d	Feedback on warrants	Jude Gonzales
8e	External awards received	Kathie Leyendecker
9	Cost effective, quality transportation systems	Charlie Trujillo
9a	Interstate construction cost per lane mile (plm)	Lee Onstott
9b	National Highway System construction cost plm	Lee Onstott
9c	Non-National Highway System construction cost plm	Lee Onstott
9d	Projects let under Quality Control/Quality Assurance	Charlie Trujillo
9e	Construction change orders by category	Lee Onstott
9f	Return on Investment (ROI) for Value Engineering Projects	Chris Ortega
10	Employees	Emilio Martinez
10a	Percentage of sick leave used	Tony Alarid
10b	Rate of employee turnover	Tony Alarid
10c	Rating from employee satisfaction survey	Tom Church
10d	Number of employees certified	Tony Alarid
10e	Number of Worker's Compensation claims and cost	Randy Baca
11	Increased transportation alternatives	Charlie Trujillo
11a	Public transit ridership	Josette Lucero
11b	Public transit vehicle revenue miles	-
11c	Number of rideshares inquiries and matches	-
11d	Annual number and revenue for aircraft registrations	Mike Rice
12	Timely completion of construction/maintenance projects	Adolfo Lucero
12a	Average day cost by contract	Lee Onstott
12b	Innovative construction contracting	-
12c	Projects with liquidated damages	Lee Onstott

Results and Measurements

13	Realistic Statewide Transportation Improvement Program	<i>Charlie Trujillo</i>
13a	Number of programmed projects let	<i>Richard Montoya</i>
13b	Dollar amount of programmed projects let	<i>Richard Montoya</i>
13c	Actual bids vs. programmed amounts	<i>Richard Montoya</i>
13d	Bid amount within 10% of engineer's estimate	<i>Yolanda Roybal</i>
13e	Actual cost vs. low bid amount	<i>Lee Onstott</i>
13f	Programmed cost vs. actual cost	<i>Richard Montoya</i>
14	Economic benefits to New Mexico	<i>Rhonda Faught</i>
14a	Number of high paying jobs	<i>Rhonda Faught</i>
14b	Number of licensed businesses	<i>Rhonda Faught</i>
15	Stable letting schedule	<i>Charlie Trujillo</i>
15a	Projects let as scheduled, three months	<i>Chris Ortega</i>
15b	Projects let as scheduled, six months	
15c	Projects let as scheduled, one year	
15d	Federal-Aid limitation/ cumulative obligation	
15e	State Program cumulative average budget and obligation	<i>Chris Ortega</i>
16	Transportation leader	<i>Pete Rahn</i>
16a	Number of public appearances	<i>Kathie Leyendecker</i>
16b	Participation at commission meetings	
16c	Innovative ideas implemented	
16d	Number of partnering agreements	<i>George Herrera</i>
17	Internal communications	<i>Carol Robertson Lopez</i>
17a	Effectiveness, employee survey	<i>Tom Church</i>
17b	Training courses offered with Communication component	

Appendix J

Pennsylvania Department of Transportation: Dashboard and Scorecard

SMC DASHBOARD

Revisions Released: Oct 13, 2000
 SEPTEMBER 2000

METRIC (MEASURE)		VARIATION	LEAD	PAGE
AGILITY (Q)	# of Partners with at least 1 WP 8.2 % growth – for Aug (+ Yellow) only .7 % growth – for Sep	Red Yellow Delay	Sherri Zimmerman	1-2
PERMIT CYCLE TIME (Q)	% of Partners with a WP 0 % growth – for Aug / Sep	Delay Green	Mike Ryan	3-4
CUSTOMER SATISFACTION MEASURES (A)		Delay	Various SMC Members	5-6
INT'L ROUGHNESS INDEX (A)		1999 Red Delay	Mike Ryan	7-8
PROGRAM DELIVERY (M/Q)	Hwy/Bridge Letts (Proj \$\$) 11 % over PS&E – for Aug	Red Delay	Various Deputies	9-10
BRIDGES (Q)	Hwy /Bridge Letts (Commit –vs- Actual) 57 % under target – for Sep	Green Delay Green	Mike Ryan	11-12
FATALITIES (M / A)		Delay	Mike Ryan	13-14
SURFACE IMPROVEMENT MAINTENANCE (Q)		FY 96-99 FY 99-00 R / +R Red (+)	Mike Ryan	15-16
WORKFORCE (Q)		FY 99-00 Red Delay	Pete Tartline	17-18
BALDRIGE (Q)		FY 99-00 Yellow Delay	Pete Tartline	19-20
GAP CLOSURE (Q)		FY 99-00 Red Delay	Various SMC Members	21-22
DRIVER LICENSING (A)		FY 99-00 Green	Betty Serian	23-24
VEHICLE REGISTRATION (A)		FY 99-00 Red	Betty Serian	25-26

Work Plans
only .7 % growth – for Sep

of Additional Work Plans (2nd ...)
.6 % growth – for Aug / Sept

Customer Satisfaction:
Aug: Welcome Centers (OCCR)
 Delayed until Oct report
 (Present @ Nov SMC Meeting)
Sept: Permits (Hwy Admin)
 Delayed until Oct report
Oct (Next Month): Planning Measure

Green FY 99-00

Delay

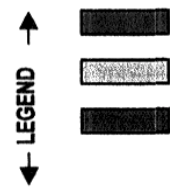
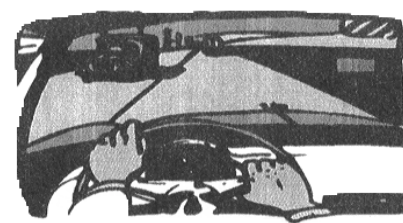
Green

Delay

Betterments (+Red)
37 % over target

Level and Seal
23 % under target

Betterments ('99-00)
50% over target – for year
(Upper Variance limit returned)



Review (Yellow): # ≤ 25% from Red Flag –or- Data under regular review

MOVING PENNSYLVANIA FORWARD

Strategic Focus Areas, High Level Goals & Strategic Objectives

STRATEGIC FOCUS AREA	HIGH LEVEL GOAL	STRATEGIC OBJECTIVE
Maintenance First	Smoother Roads	<i>Improve ride quality by incorporating smooth road strategies into a comprehensive pavement program.</i>
	Cost Effective Highway Maintenance Investment	<i>Refine winter services best practices to achieve more timely and efficient response</i>
		<i>Use life cycle criteria as a tool for asset management and investment to reduce outstanding maintenance needs</i>
Quality of Life	Balance Social and Environmental Concerns	<i>Improve customers' experiences of our facilities by enhancing beautification efforts and reducing roadside debris.</i>
		<i>Develop timely transportation plans, programs & projects that balance social, economic, and environmental concerns.</i>
	Demonstrate Sound Environmental Practices	<i>Implement a strategic environmental management program that adopts sound practices as our way of doing business.</i>
Mobility and Access	Delivery of Transportation Products and Services	<i>Meet Project Schedules and complete work within budgeted costs.</i>
	Efficient Movement of People and Goods	<i>Implement congestion management strategies that limit work zone restrictions, address incident management, and reduce corridor travel delays.</i>
		<i>Implement Keystone Corridor rail passenger improvements as a pilot multi-modal initiative.</i>
Customer Focus	Meet and Exceed Customer Expectations	<i>Implement a department-wide systematic process to continue to improve customer satisfaction.</i>
	Improve Customer Access to Information	<i>Improve access to driver and vehicle information with professional, knowledgeable, courteous, responsive and timely customer contacts.</i>

MOVING PENNSYLVANIA FORWARD

Strategic Focus Areas, High Level Goals & Strategic Objectives

STRATEGIC FOCUS AREA	HIGH LEVEL GOAL	STRATEGIC OBJECTIVE
Innovation and Technology	World Class Process and Product Performance	<i>Deliver business results through planned, enterprise-focused information technology.</i>
		<i>Map key departmental processes and reengineer those with the most strategic impact on business results.</i>
Safety	Safer Travel	<i>Implement cost-effective highway safety improvements at targeted high crash/fatality locations</i>
		<i>Upgrade safe driving performance through education and enforcement initiatives.</i>
	Safer Working Conditions	<i>Implement prevention strategies to reduce the employee injury rate.</i>
		<i>Implement prevention strategies to reduce the vehicle accident rate.</i>
Leadership at All Levels	Improve Leadership Skills and Capabilities	<i>Provide employees with the tools and expectations to communicate effectively in order to facilitate leadership at all levels.</i>
		<i>Foster an environment of individual initiative and innovation through a structured process of instruction, practice, and leadership opportunities.</i>
Relationship Building	Cultivate Effective Relationships	<i>Implement a department-wide methodology to involve partners and stakeholders more meaningfully in PennDOT activities.</i>
		<i>Strengthen grants management relationships utilizing the department-wide methodology for partners and stakeholders.</i>

Moving Pennsylvania Forward Strategic Agenda: PennDOT Scorecard of Measures

STRATEGIC FOCUS AREA	High Level Goals <i>Pledge to Customers</i>	How Success will be Measured?	External (Customer)	Internal (Support)	Measurement Tool (Metric)	Target	
						2002	2005
MAINTENANCE FIRST	<i>Smoother Roads</i>	Better ride conditions on major (NHS) highways	X		International Roughness Index (IRI)	104 for NHS roads	99 for NHS roads
	<i>Cost-effective highway maintenance investment</i>	Reduction in outstanding maintenance needs		X	Condition Assessment for highways and bridges	Complete asset management system	Meet target established in 2002
QUALITY of LIFE	<i>Balance social, economic, and environmental concerns</i>	Timely decisions based on public and technical input on project impacts	X		Highway project environmental approvals meeting target dates	75% meeting target dates	90% meeting target dates
	<i>Demonstrate sound environmental practices</i>	Attaining world class environmental status		X	ISO 14001 environmental criteria	Implement a pilot program	Meet ISO standards
MOBILITY and ACCESS	<i>Delivery of transportation products and services</i>	Honoring commitments on scheduled transportation projects	X		Dollar value of 12-Year Program construction contracts initiated	\$1.3 billion per year	\$1.4 billion per year
	<i>Efficient movement of people and goods</i>	Reduced travel delays	X		2002 – peak period work zone lane restrictions 2005 – travel delays on selected corridors	Set baseline in 2000 for reduced 2002 lane restrictions	Meet target set in 2002 to reduce corridor travel delays
CUSTOMER FOCUS	<i>Improve customer satisfaction</i>	Competitiveness on Malcolm Baldrige Criteria for Excellence	X		Baldrige Organizational Review Package Scores – Customer Criteria	80 Department average	100 Department average
	<i>Improve customer access to information</i>	Prompt answers to telephone inquiries	X		Answer rate of calls to the Customer Call Center	94% of calls answered	94% of calls answered
INNOVATION and TECHNOLOGY	<i>World class process and product performance</i>	Competitiveness on Malcolm Baldrige Criteria for Excellence	X		Baldrige Organizational Review Package Scores – All Criteria	500 level met by lead organizations	600 level met by lead organizations
SAFETY	<i>Safer Travel</i>	Fewer fatalities from highway crashes	X		Number of fatalities per year	5% reduction in fatalities	10% reduction in fatalities
	<i>Safer working conditions</i>	Fewer work-related injuries		X	Injury rate per 100 employees working 1 year	8.25% injury rate	7.5% injury rate
LEADERSHIP at all LEVELS	<i>Improve leadership capabilities and work environment</i>	Positive trends in employee feedback on job related factors		X	Organizational Climate Survey (OCS) – Selected Items	48% positive rating	54% positive rating
RELATIONSHIP BUILDING	<i>Cultivate effective relationships</i>	Effectiveness of partnerships to achieve business results	X		PennDOT/Partner business effectiveness survey scores	Establish metric, baseline and target	Meet target established in 2002

Appendix K

Florida Department of Transportation: Mobility Measures

Mobility Performance Measures for Highways

Dimension of Mobility	Mobility Performance Measures					
		State Highway System	Florida Intrastate Highway System	Florida Intrastate Highway System	Corridors	Metropolitan highway Systems
Quantity Of Travel	Person miles traveled	●	●	●	●	AADT * length * vehicle occupancy
	Truck miles traveled	●	●	●	●	AADT * length * % trucks
	Vehicle miles traveled	●	●	●	●	AADT * length
	Person trips				●	Total person trips
	Average speed	●	●	●		Average speed ² weighted by PMT
Quality of Travel	Delay	●	●	●	●	Average delay
	Average travel time			●		Distance / Speed ²
	Average trip time				●	Door to door trip travel time
	Reliability				●	% of travel times that are acceptable
	Maneuverability			●		Vehicles per hour per lane
Accessibility	Connectivity to intermodal facilities	●	●	●	●	% within 5 miles (1 mile for metropolitan)
	Dwelling unit proximity		●	●	●	% within 5 miles (1 mile for metropolitan)
	Employment proximity		●	●	●	% within 5 miles (1 mile for metropolitan)
	Industrial / warehouse facility proximity		●			% within 5 miles
	% miles bicycle accommodations				●	% miles with bike lane / shoulder coverage
	% miles pedestrian accommodations	●			●	% miles with sidewalk coverage
Utilization	% system heavily congested	●	●	●	●	% miles at LOS E or F
	% travel heavily congested	●	●	●	●	% daily VMT at LOS E or F
	Vehicles per lane mile	●	●	●	●	AADT * length / lane miles
	Duration of congestion	●	●	●	●	Lane-mile-hours at LOS E or F

AADT – annual average daily traffic

PMT – person miles traveled

VMT – vehicle miles traveled

LOS – level of service

HCM – Highway Capacity Manual

Mobility Performance Measures for Metropolitan Transit Systems

	Mobility Performance Measures	Definition
Quantity of Travel	Ridership	Total passenger trips
Quality of Travel	Auto / Transit Travel Time Ratio	Door-to-door trip time
	Reliability	On-time performance
Accessibility	Coverage	% person minutes served
	Frequency	Buses per hour
	Span	Hours of service per day
Utilization	Load Factor	% seats occupied

Appendix L

Suggested Research

Appendix L

Suggested Research

While this initial scan has identified a variety of innovative practices in strategic leadership and performance measurement in state transportation departments, it has also identified some outstanding issues and other areas where further research is needed. The following research agenda outlines several applied research projects that will build on the initial scan and produce information that will be useful to DOTs in strengthening their strategic management capacity. The following recommended projects are presented in order of priority:

- A more complete survey and synthesis of strategic management practices in state DOTs.
- Comparative case studies of four or five leading edge DOTs, focusing on the alignment of program and operational planning, performance management, budgeting, performance measurement, and other management processes with strategic planning.
- An analysis of the interrelationships among strategic planning, long range transportation systems planning, and asset management processes in state DOTs.
- A synthesis of best practices and leading edge research on performance measurement with regard to transportation outcomes and economic development and environmental impacts.
- An analysis of the issues concerned with, and approaches to, sustaining DOT and their strategic management processes through transitions of administrations and ensuring that they will be responsive to changes in political mandates.
- An investigation of effective communications strategies in DOTs and other organizations for building support for strategic plans among both internal and external stakeholders.
- A survey of the variety of approaches to soliciting customer input and feedback used by DOTs to support strategic management processes.

Each of these recommended studies can be undertaken as a stand-alone research effort. However, projects 1 and 2 also are closely related and could be combined in one larger project, with the survey and synthesis conducted in Phase 1 providing a more complete foundation for the case studies to be carried out in Phase 2. Similarly, project 1 and project 3 could readily be combined because they involve the same research process.

Project 1

Strategic Management in State Transportation Departments: A Survey and Synthesis

Problem Statement

The initial scan reported here has identified some innovative approaches to strategic management and performance measurement in state DOTs. However, this is based on an admittedly incomplete approach. Given the scan's relatively limited scope in terms of time and resources, it is likely that truly innovative practices were not identified even in those DOTs in which interviews were conducted. In particular, due to the unusually short time frame for the initial scan, fielding a uniform survey to all 50 DOTs was not thought to be feasible. Many other DOTs that were not contacted may well be utilizing some of the same approaches or other innovative practices of their own. While this scan has produced some valuable information, a more comprehensive survey of innovative approaches to strategic management in state DOTs would provide a more complete assessment of the state of the art.

Research Approach

This research will build on the initial scan by conducting a mail-out survey to all 50 state DOTs on their approaches to strategic management. The questions would focus on strategic planning, business planning, performance management, budgeting, and performance measurement. The survey itself will provide useful information, but based on the results follow-up telephone interviews will be conducted with CEOs and/or other executives and managers from all DOTs which were not contacted during the initial scan. In some cases, additional interviews will be conducted with staff from DOTs that already have been contacted through the initial scan if the survey indicates areas of interest not already covered. In addition, materials forwarded by the DOTs will also be reviewed prior to, and after, the interviews.

Usefulness of the Results

The results of this survey and synthesis will produce a more comprehensive picture of innovative practices currently being used to strengthen DOTs' capacity for strategic leadership. Adding to the findings of this initial scan, this information will serve as a valuable source of ideas for departments that are interested in experimenting with new approaches to developing, implementing, and evaluating strategic plans.

Estimated Budget

\$120,000

Project 2

Strategic Management in State Transportation Departments: Comparative Case Studies

Problem Statement

Effective strategic management requires the integration of strategic planning with program and operational planning, performance management systems, budgeting processes, performance measurement systems, and other management processes. While most state transportation departments have completed strategic planning efforts, multiple times in some cases, the process often breaks down in the implementation stage. The initial scan reported on here was necessarily organized on a topical basis, looking at various elements in the process one at a time, but effective strategic management requires a close alignment among them. Thus, research is needed to explore the strategic management process in greater depth and to learn more about how successful DOTs achieve this kind of alignment.

Research Approach

This research will consist of in-depth case studies of four or five selected state DOTs that seem to have developed proactive approaches to strategic management. These departments will be identified through the findings of this initial scan, indications of longer term experience with strategic management, other suggestions, and their willingness to participate. The research will proceed through a detailed review of materials, site visits to each of these departments, and interviews with numerous individuals involved in the process. Rather than rating individual departments, the emphasis of the case studies will be to look for similarities and dissimilarities in approaches among these DOTs, assess the advantages and disadvantages of particular approaches, and learn more about effective approaches in different situational “fits”.

Usefulness of the Results

The results of these comparative case studies will clarify a holistic view of the overall strategic management process in state DOTs, provide examples of effective approaches to ensuring alignment among its constituent elements, and identify the strengths and weaknesses of various approaches. Thus, these results will be informative to other DOTs in strengthening their overall strategic management processes.

Estimated Budget

\$150,000

Project 2 could be combined with Project 1

Strategic Planning, Transportation Systems Planning, and Asset Management in State DOTs: A Focus on Interrelationships

Problem Statement

Most state DOTs engage in some form of strategic planning for the corporate enterprise. In addition, all state transportation departments develop long range transportation systems plans, although some are more conceptual policy plans while at the other extreme some are exhaustively project specific. The review of materials and the interviews conducted in this initial scan revealed differences from state to state in the relationships between these two types of plans. This is not surprising, given the fact that they are typically developed separately through different processes with different mixes of stakeholder involvement. However, it does raise an issue about the extent to which strategic plans and long range systems plans should inform or reinforce each other, and the extent to which they are consistent in terms of substantive goals and priorities. How do, or how can, state DOTs ensure a true complementarity between these two planning frameworks?

Many DOTs are also investing heavily in new asset management programs at present, designed to help preserve, operate, and enhance the transportation infrastructure under their control. With their focus on strategies for optimizing the performance of transportation systems and facilities in the long run, from both an engineering and economics perspective, these asset management programs clearly have some overlap with both strategic plans and long range transportation systems plans. Inconsistencies among them, reflected for example in a short term priority on improving ride quality versus preserving pavement performance in the long run, could obviously be problematic. Thus, research should be undertaken to explore how state DOTs manage the interrelationships among these three processes, and how they can best be coordinated.

Research Approach

This research will be conducted through a mail-out survey of all 50 state DOTs, followed by telephone interviews and a review of documents from selected states. The subject will be the extent to which strategic plans, long range system plans, and asset management programs in DOTs reinforce each other versus the extent to which there are inconsistencies, incompatibilities, or problems among them. The real purpose of this investigation will be to determine how DOTs can coordinate these three macro systems to best advantage.

Usefulness of the Results

The results of this research will reveal the extent to which problems do arise concerning the interrelationships among these three processes and will identify approaches that DOTs can take to ensure that they are in fact mutually reinforcing.

Estimated Budget

\$100,000

Transportation Outcomes and Other Impact Measures: A Synthesis of Best Practices and Current Research

Problem Statement

As is readily apparent from the findings of this initial scan, state DOTs have been implementing management systems and performance measures that are much more results oriented than in the not-too-distant past. Yet, many departments are struggling to develop measures of the kinds of results that are really the most important: transportation outcomes and associated economic and environmental impacts. While outputs and even immediate outcomes of transportation programs often lend themselves to direct measurement, outcomes such as decreased travel times or increased mobility in general are often quite elusive. This is also the case with respect to economic development objectives and environmental impacts. Research is therefore needed to identify best practices along these lines as well as to examine leading edge research in this area and its utility to state transportation departments.

Research Approach

Building on NCHRP Synthesis 238 and papers presented at the TRB sponsored conference on performance measurement in the Fall of 2000, this survey will utilize a mail-out survey of all 50 DOTs to identify the performance measures they use, for either strategic management or long range system planning, to assess transportation, economic development, and environment impacts. This will be followed up with telephone interviews with personnel in selected DOTs and a review of materials forwarded by DOTs to learn more about how these measures are utilized, and their advantages and disadvantages in terms of coverage, frequency, specificity, reliability, costs, and feasibility, etc. In addition, an extensive literature review will be conducted, looking at the results of research in the U.S. and other countries, to learn more about alternative approaches to outcomes measurement in the field of transportation that might prove useful for DOTs.

Usefulness of the Results

The results of this research can help DOTs implement more useful outcome measures by providing current information on both state of the practice measures that are used by leading edge agencies as well as approaches developed by the research community that might be more useful.

Estimated Budget

\$90,000

Sustaining and Adapting Strategic Management Processes Through Transitions of Administrations

Problem Statement

During the course of this initial scan, a few DOTs were encountered that are in some degree of disarray in terms of strategic direction or the process of strategic management itself, due to transitions in gubernatorial administrations and/or top leadership in the department. The problem of such transitions is a familiar issue in the field of public administration. Problems often arise because incoming officials do not appreciate the value of existing leadership resources and strategic management processes that are already in place or fail to utilize them effectively to bring about desired changes, or because the organization itself does not have the capacity to respond quickly and effectively to the new political mandates, policy directions, and priorities that may be important to a new administration.

As became clear through the course of this initial scan, many state DOTs are undertaking strategic leadership initiatives that are intended to transcend a particular administration. Yet, adaptability to altered circumstances and new drivers of change is essential for strategic leadership in the long run. In this era of unprecedented change, state DOTs require the flexibility to pursue new strategic directions while retaining their sense of mission and core functions. Some DOTs have been more successful than others in navigating such transitions, even renewing themselves and maintaining their strategic capacity for change as needed to ensure continued high levels of organizational performance and service to the public. However, the formulas for success along these lines have not been codified, and that is the purpose of this proposed research.

Research Approach

This research will begin with a review of the general public administration literature on administrative transitions, along with existing transportation specific literature such as NCHRP Report 371, *State Departments of Transportation: Strategies for Change*. Based on the literature, the results of this initial scan, and input from individuals who are knowledgeable in this area, five to seven state DOTs will be selected for follow-up case studies, including departments that have successfully negotiated administrative transitions as well as some that have had difficulty in doing so. The researchers will conduct telephone interviews and site visits with each of these DOTs in an effort to learn as much as possible about the factors, conditions, and specific approaches that facilitate effective transitions.

Usefulness of the Results

The results of this research will provide DOTs with a clearer understanding of approaches to embedding a strategic management culture and systems in their departments and strengthening their organizations' capacity for strategic leadership so as to increase the probability of health and productive administrative transitions.

Estimated Budget

\$150,000

Effective Communications Strategies for Promoting Strategic Plans

Problem Statement

During the course of interviews conducted as part of this initial scan, several CEOs indicated that they felt a need for more effective communications strategies for promoting their strategic plans to managers and employees in their organizations as well as to external stakeholders. While it is obvious that in large and complex organizations like most state DOTs, effective communication is essential for developing buy-in to a department's strategic agenda, there is no consensus regarding how best to do that. Thus, research is needed to examine the most effective communications strategies for promoting strategic plans.

Research Approach

Beginning with a review of literature on managerial communications across organizations and sectors, this research will be conducted through a mail-out survey of all 50 state DOTs and proceed with follow-up telephone interviewing with officials in selected departments, along with a review of materials they submit. The focus will be on the communication medium or venue – meetings, retreats, special events, newsletters, reports, web based media, etc. – as well as message content and intended audiences. It will also explore strategies for communicating in order to promote strategic plans in conjunction with various management processes, such as performance management, transportation planning and programming, budgeting, and performance measurement.

Usefulness of the Results

The information produced by this research will present an array of strategies for CEOs and their management teams to use in communicating with a variety of stakeholders in order to promote their buy-in to DOT strategic plans.

Estimated Budget

\$90,000

Obtaining Customer Input on Needs and Satisfaction

Problem Statement

As is quite apparent in this initial scan report, state DOTs have become much more customer oriented in their strategic management processes, and they are very concerned with soliciting and utilizing customer feedback. CEOs have articulated two important aspects of customer based information that they need: (1) users' satisfaction with current services and products, and (2) customers' needs and preferences for services, and the importance to them of various services that DOTs are or could be providing. This kind of information can help evaluate performance, market agency programs, identify strategic priorities, communicate more effectively with external audiences, and target programs and funds to meet critical needs. While many DOTs have a variety of customer feedback mechanisms in place, others are just beginning to do so, and there should be no need to "reinvent the wheel" in this area. Thus, research is needed to build on to NCHRP 20-24 (10) *Customer Based Quality in Transportation* and to identify best practices in obtaining customer feedback as well as the most appropriate matches between solicitation techniques and managerial uses.

Research Approach

This research will begin with a review of literature on customer feedback and market research techniques and then conduct a mail-out survey of all 50 state DOTs asking about the use of such techniques as customer surveys, interviews, focus groups, "juries" and panels, advisory committees, response cards, kiosks, and internet and website applications. This will be followed up with telephone interviews with managers in several DOTs to learn more about how they actually implement these techniques and how they use the resulting data to improve performance.

Usefulness of the Results

The results of this research will be directly applicable to DOTs that are undertaking or expanding customer feedback initiatives. It will provide them with very specific information regarding the design and implementation of customer feedback techniques and greater insight as to how to utilize customer feedback data more effectively to improve programs, service delivery, operations, and overall performance.

Estimated Budget

\$90,000