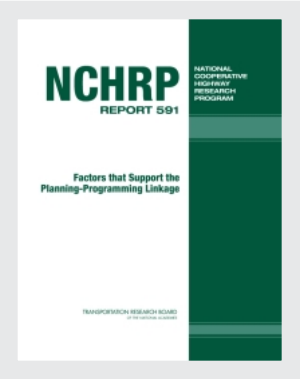

Factors that Support the Planning-Programming Linkage

ISBN 978-0-309-42486-8 | DOI 10.17226/23268

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP REPORT 591

Factors that Support the Planning-Programming Linkage

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WITH

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Anchorage, AK

Subject Areas
Planning, Administration, and Environment • Public Transit

Research sponsored by the American Association of State Highway and Transportation Officials
in cooperation with the Federal Highway Administration

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.
2007
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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

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NCHRP REPORT 591

Project 8-50
ISSN 0077-5614
ISBN 978-0-309-09901-1
Library of Congress Control Number 2007935688

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

are available from:

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

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Printed in the United States of America

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FOREWORD

By Kimberly M. Fisher
Staff Officer
Transportation Research Board

This report contains a list of 39 factors that influence the linkage between programming and long-range plans. This list was developed from recent literature and extensive interviews with agency staff and other experts in the field. While the discussion of the critical factors is helpful, the report takes this topic one step further by providing suggested paths for improving the linkage between planning and programming. This report should be of significant use to transportation planners, project programmers, and the leadership in transportation agencies.

It is generally acknowledged that a stronger link should exist between planning and programming of transportation projects to ensure that long-range transportation plans direct the selection of the projects that are included in priority programs. In reality, there are nearly as many forms of linkage between planning and programming as there are states. Without strong planning-programming links, the results of statewide and regional plans can fail to be properly reflected in priority programs, thereby jeopardizing the ability to ensure timely progress in implementing those plans. This research is based on the hypothesis that organizational and other factors can contribute to a strong connection between the outcomes of long-range plans and the projects that are included in priority programs, thereby ensuring progress in implementing those plans.

The objective of this research was to develop a guidebook to explore the factors that influence the connection between planning and programming. Under NCHRP Project 8-50, Cambridge Systematics, Inc., with the assistance of HDR, Inc., identified 39 factors. The factors (both positive and negative) were ranked by their effect on the linkage and their existence in real practice was gauged. The final objective of this research was to provide guidance on the steps that transportation agencies can take to strengthen the linkage between planning and programming.

Transportation planners, project programmers, and the leadership in transportation agencies will find this report of significant use. As these transportation professionals struggle to be good stewards of growing transportation systems with limited funding, the report will provide methods and tools to improve the connection between planning and programming.

CONTENTS

SUMMARY

Factors that Support the Planning-Programming Linkage

The objective of NCHRP Project 8-50, "Factors that Support the Planning-Programming Linkage" was to identify:

1. What factors are important to a strong link between long-range transportation plans and shorter-range investment programs (Throughout the report, "programs" refers to either Statewide Transportation Improvement Programs [STIPs] or Transportation Improvement Programs [TIPs] required under federal law at the state and urbanized area [UZA] levels, respectively.);
2. How important and how widespread these factors are in current practice;
3. How processes and procedures in selected state and regional agencies address (or fail to address) these factors; and
4. What lessons can be learned and offered to agencies that wish to enhance the linkage between long-range plans and programs.

These questions were addressed through surveys of senior managers at state departments of transportation (DOTs) and metropolitan planning organizations (MPOs) as well as in-depth interviews with a selected subset of state and regional agency senior staff.

Linking Plans and Programs: An Emerging Agenda

Thirty-nine factors in seven major categories have been identified as important in strengthening and sustaining the link between long-range plans and programs (See Section 3). Of those 39 factors, a subset has been identified as being perhaps most worthy of attention. These include factors considered to be **both** *most important* and *least in evidence* in current practice. They include:

- Clear linkage between broad policy themes, plan goals, and project priorities;
- An intermediate-range plan element;
- Political leaders who understand and follow the planning-programming process;
- Implementing agencies that support a shared vision and goals; and
- Technical and analytical justifications that are strong.

As a further guide to actions that might be taken by individual agencies interested in strengthening the plan-program link, the combined findings of surveys and interviews summarized in the sections that follow suggest that priority be given to three broad areas:

- Performance measurement and applications,
- Communications, and
- Leadership.

Performance Measurement and Applications

It is apparent from the study results (and increasingly well recognized in the industry) that the critical element in linking long-range plans to short-term investments lies in the ability to express "outcome"-based goals (e.g., mobility, access, safety), define measures of performance that relate to those goals, and use those same measures to set priorities and allocate funds for investment.

Several performance-based planning and programming applications are highlighted throughout the body of the report and the literature on performance-based planning and programming is extensive.

Communications

Other factors identified as important in strengthening the planning-programming linkage do not lend themselves to mechanistic or analytical approaches or solutions in the way that performance measurement does. Rather, they are dependent to a very large degree on *enriching and expanding dialogue and communications* within and across organizations and key participant groups. While a majority of the agencies surveyed and interviewed felt they do a very good job in communications, the fact that issues related to organizational culture, leadership, and external influences were cited as areas of potential weakness suggests otherwise.

Communications between staffs directly responsible for planning and programming may be effective, but communications with political leadership and policymakers, communications with other units within DOTs or MPOs, and communications with other agencies with parallel agendas and responsibilities appear to be somewhat less effective, or even a threat to a strong plan-program link. Resolving shortcomings in these areas, or targeting key opportunities to improve the planning-programming linkage may require (1) enhancing the knowledge and role of politicians and policymakers in supporting a stronger plan-program link, (2) ensuring that the full agency staff is knowledgeable of and acting in support of plan goals and objectives and related policies in their day-to-day activities, and (3) building mutual understanding and mutually reinforcing polices and procedures across government and partnering agencies that may have been in conflict or "out of synch."

Leadership

Politicians and policymakers as well as senior professional leaders must sustain a commitment to improving the plan-program link if progress is to be made. Where leaders of both types have been longstanding, active participants in transportation planning and programming, the challenge to leadership may not be so extreme. Where there is more rapid turnover among the political leadership (i.e., two- and four-year electoral cycles) and professional leadership, a greater effort at regularly briefing and educating leaders may be needed.

Nurturing and supporting political and professional leaders to become more effective supporters of a stronger link between plans and programs is, in essence, a specialized aspect of the larger communications agenda. Political and professional leaders may be the single most important discrete audience.

A final critical aspect of supporting strong leadership involves comprehensive documentation of processes, procedures, and progress through periodic reviews and reporting, mandated either through statutory language, regulations, or administrative procedures.

An Agenda

Section 6 outlines a very basic agenda to strengthen the planning-programming linkage. The agenda suggests action on three fronts:

1. A self-assessment to provide a baseline for action,
2. Development of a strategy and specific actions to strengthen key aspects and factors, and
3. An implementation plan that ensures steady progress.

Self-Assessment

The agencies should assess how directly current plans and programs are linked. Senior and mid-level managers as well as policymakers and elected officials inside and outside the agency might be asked which of the 39 factors they believe to be most important to strengthen the planning-programming linkage, and the extent to which each factor is in evidence in the agency's current processes. The survey used in this project may provide a starting point for the self-assessment.

Development of a Strategy and Actions

An agenda might be defined initially around the results of the assessment. Agencies that may feel they are "behind the curve" in linking programs more effectively to plans might benefit from fuller documentation and more concerted promotion of those *linkage factors that already are in broad use:*

- Programming is based on a full understanding of a policy framework, the role of data, and technical analysis;
- Planning and programming steps and procedures are well defined;
- Planning and programming functions are closely linked in the organizational structure;
- Clear, open communications exist between planning and programming units;
- Agency staff maintains a high level of knowledge and skill in planning and programming;
- Long-range transportation plan (LRTP) contains specific policy guidance for investment decisions;
- Planning and programming offer flexibility to meet local and statewide needs;
- Senior professional leadership provides sustained support for vision and LRTP;
- Political leaders are engaged throughout the process; and
- Regular dialogue and feedback occur between the agency and stakeholders.

A second, alternative focus might be to embrace key *factors that are not yet widely in evidence* as noted by survey respondents and interviewees:

- Staff and policymakers focus more on outcomes than on individual projects;
- Performance measures are based on goal-oriented outcomes;
- Fund allocation factors are based on performance measures reflecting LRTP goals;
- The LRTP contains a short-range element to guide programming;
- Technical and analytical justifications are strong;
- Policymakers understand the benefits of transportation investments;
- Political leaders know and follow the planning-programming process;
- Implementing agencies support shared vision and goals; and
- Actions of outside agencies reinforce transportation plans and programs.

An Implementation Plan

Success in executing an agenda to strengthen the planning-programming linkage will require that (1) specific individuals and/or units have formal responsibility for executing whatever agenda

emerges, (2) resources—both time and budget—be committed to the effort, and (3) activities and progress be reported on a regular basis.

Additional Major Findings and Conclusions

In addition to the steps laid out previously and in Section 6, a number of more specific themes emerged from the project that may be useful in strengthening the linkage of plans and programs. These themes are discussed in greater detail in Section 5.

1. **Planning-programming linkage is often indistinct, indirect, and difficult to evaluate.**
   As long-range plans shift toward being policy documents and away from being project-specific listings, a direct link to an STIP often cannot be readily seen or tracked. Instead, intermediate steps are needed to determine the extent to which programmed projects and fund allocations implement the plan. These steps include clarity in goals and objectives and performance measures with specified targets that are used to assign priority and allocate funding to projects that provide the greatest progress toward goal achievement.
   If this sequence is weak or disjointed, the linkage between the plan and program will likely be, at best, difficult to evaluate and, at worst, weak.
2. **The integrity and usefulness of the long-range planning process is being threatened.**
   The relevance of long-range planning is threatened and the interest of stakeholders in participating in long-range planning may be declining because of several factors. First, maintenance and preservation are consuming an increasing share of capital budgets but excite little passion among stakeholders interested in system expansion. Second, the explosion of federal "earmarks" has diverted scarce funds to new projects that are not always the highest priorities of state DOTs or local governments. Third, statutory and constitutional restrictions in many states limit the use of traditional motor fuel tax revenues to highways, undercutting multimodal applications. Finally, growing use of popular referenda to approve projects further undercuts long-range planning as a basis for setting priorities and programming available funds.
   As a result, long-range planning appears to be spurring less popular interest and participation in many areas, despite the growing recognition that not enough is being done to enhance our travel experiences and expand our transportation systems and services.
3. **The value of long-range planning remains important for several reasons.**
   The long-range planning process can continue to ensure that programming focuses on the "right" projects by engaging leaders, experts, and citizens in setting a clear vision that provides consensus direction for actions and transportation investments; establishing a shared rationale for funding allocations to broad categories of investment that represent clear policy choices; and establishing the policy context for shorter-range or regional planning and programming.
4. **Flexibility in the use of funds is increasingly important.**
   Limitations on available funds put a premium on flexibility and creativity in mixing federal, state, local, and, in some cases, private funds to achieve maximum benefit and timely progress. States that are focused primarily on matching federal funds program-by-program appear to be the most fiscally constrained. States that de-emphasize the "siloed" sources of funds, particularly at the federal level, and are aggressive in maximizing fund flexibility are likely to find a more effective balance in addressing short-range priorities and long-term goals.
5. **Policy plans are being more broadly embraced.**
   Policy plans offer opportunities to arrive at a broader consensus on overall directions and mutually acceptable goals. They also avoid the layering up of project proposals over

unreasonable timeframes that become too expensive to implement but too difficult politically to "remove" from a plan. Where DOT leadership does not strongly support long-range planning, however, policy plans can be "fuzzy" and provide little direction in subsequent project selection. Similarly, where evaluation and project prioritization rely only on subjective judgments or qualitative characterizations of a project's impact on goal achievement, the plan-program link cannot be said to be strong.

6. **Intermediate-range plan documents (between 20-year LRTPs and 4- to 6-year STIPs) are seen as increasingly useful.**

   The out-years of long-range plans are accepted as indistinct and not appropriate for firm funding commitments. Short-term programs, on the other hand, do not capture the full life cycle of projects and investment requirements in today's complicated and lengthy stages of project development. The intermediate-range plan covering 6 to 12 years is emerging as a helpful product (and process) to connect long-range plans to specific programmable projects, better matching available funding to real project life cycles and timetables.

7. **A simple system of major investment categories provides a framework important for a strong link.**

   Attention to and clear distinctions between *preservation*, *operations improvements,* and *capacity expansion* investments at some level provides a potentially more direct connection to plan goals as well as use of more sophisticated analytic approaches to assess need and priority. Goal-oriented investment categories appear to reduce pressures for less effective funding allocations based on simple geographic or system size that do not reflect needs or priorities.

8. **Pooled funding, "immediate-opportunity" funds, or policy funds provide critical responsiveness.**

   Special categories of funds can function as an escape valve to relieve political pressures and allow timely responses to situations or circumstances that require attention faster than the plan and program amendment process allows. Without some rapid-response funding source and localized flexibility, the programming process can be criticized as being too slow and unresponsive to rapidly changing needs.

9. **"Corridor" focus has variations that can sharpen and strengthen the planning-programming linkage.**

   "Systems of statewide significance" establish critical corridors or subsystems that are becoming the focus of attention in many states, creating a rationale for targeting investment and differentiating priorities across functional class and geography. A corridor focus for planning also provides a means for assessing system-level needs, priorities, and investment impacts at a scale that is more useful than evaluating activity-specific impacts.

10. **Effective measurement of performance across broad goal areas, and the allocation of funds to improve performance, lies at the core of the planning-programming linkage.**

    If a program of projects cannot be justified by objective evidence of the problem or objective estimates of likely progress against shared goals, the plan-program link is weak or nonexistent. Project sponsors and funding agencies must present credible data to make the case for priority investment; there must be a common understanding of causal relationships between types of projects and investments and the consequences in relation to goals; and there must be analytical tools available for consistent evaluation of project impacts and consequences expressed in terms of plan goals and objectives.

11. **Data- and performance-based planning and programming are on the rise.**

    While long-range plans are increasingly policy oriented, enhanced management systems provide rapidly improving means, increasingly via databases, to assess the extent of problems and/or deficiencies and the value of alternative investment options in addressing them. Management systems appear to guide or direct an increasing proportion of investment in

maintenance and system preservation, reducing the political tendency to underspend on preservation of existing systems.

12. **Collocating planning and programming functions can enhance the linkage.**

    Strong planning-programming linkage appears more likely when the two functions are being carried out under the authority of the same senior manager and/or when the organization is structured to ensure a strong plan-program link. Collocation of planning and programming functions, however, does not appear to be sufficient by itself to ensure a strong plan-program link, largely because numerous other factors impact the linkage, regardless of the organizational structure.

13. **Good internal communication can overcome organizational weaknesses.**

    The disadvantages of not having planning and programming functions housed "near" one another in the organizational structure can be reduced through effective communications and the commitment of leadership to focus on the linkage.

14. **Top-level leadership and support is essential to sustain a disciplined, rational approach to project selection, i.e., to ensure programs reflect and serve plan goals and policies.**

    Committed senior professional leadership is essential to avoid undue internal and external political involvement or stagnation in designing and applying goal- and performance-based planning and programming processes. Leadership on the political and policy level as well as on the professional managerial level are both necessary; the absence of one can dilute the effectiveness of the other.

15. **Local/regional committees of citizens and community leaders with formal, defined roles in project review, evaluation, and prioritization help build consensus and avoid the appearance of insularity in decision making.**

    Establishing a clear sense of resource availability and funding priorities at the local or regional level provides a basis for more effective working relationships and decision making. When resources to address regional priorities are consistently unavailable, interest in the process declines and the impetus to intervene in the programming process through channels outside the planning process is increased, damaging the link between plans and programs. The plan-program link appears to be made stronger where local and regional officials and stakeholders exercise significant formal authority within a process and guidelines (1) that they themselves have had a hand in shaping and (2) that allows a degree of flexibility to ensure that local needs can be defined and addressed.

16. **The linkage of programs to budget development and financial management is becoming as important as the linkage of plans to programs.**

    The continued introduction of discrete programs ("funding silos") and the introduction of new, innovative funding and financing techniques are creating greater complexity in financial and budgetary management and oversight. The degree to which DOT financial and budget offices are involved in the programming process varies widely, but cash management complexities make better integration of programming, budget, and finance essential (1) to avoid having the budget process drive prioritization and programming and (2) to take full advantage of funding flexibility.

17. **State transportation commissions provide an important buffer between the technical and political dimensions of decision making, serving to reinforce rational processes and data-driven decisions.**

    States without separate transportation commissions appear to have more programming decisions and funding commitments made outside the planning-programming process. They seem also to have less well-developed analytical processes available to guide decision making. The reverse appears to be true in states with formal transportation commissions, regardless of the wide variability with which they operate. The opportunity to link plans and programs effectively in relation to needs may be greater when actions are focused outside the traditional legislative process.

18. **DOT and MPO relationships are critical.**

    The interaction of MPOs and DOTs can determine how effective the program will be in meeting shared or divergent goals. The degree of influence that DOTs and MPOs have on each other and the procedures for interacting play a role in linking plans to programs. Generally, an open, continuing partnering approach to MPO and DOT planning and programming is beneficial to strong planning–programming linkage.

Consideration of these major themes, together with the steps outlined at the outset and in Section 6, offers a useful framework and substantive focus for strengthening the linkage between long-range planning and programming, regardless of the current character of an agency's planning and programming processes.

SECTION 1

Introduction

1.1 Project Description

NCHRP Project 8-50, "Factors that Support the Planning-Programming Linkage," identified factors that enhance (or detract from) the linkage between long-range (statewide) transportation plans (LRTPs and SWTPs) and the shorter-term STIPs and metropolitan TIPs that establish priorities and timetables for actual project-level investments.

The project was undertaken with several initial assumptions or hypotheses in mind:

- It is desirable (and required in Federal Joint Planning Regulations) that long-range plans, both statewide and regional in scale, directly influence the programming of projects for implementation;
- Absent a strong link between long-range planning and programming, progress in implementing long-range plans and meeting established plan goals will be slowed or jeopardized;
- If, in fact, long-range plans have little impact on project selection, it is fair to question the purpose of long-range plans beyond the need to satisfy federal requirements and public-relations needs;
- Many factors affect the degree of linkage between plans and programs; and
- Organizational and related factors play a significant role in the strength and effectiveness of planning-programming linkage.

Conclusions regarding these hypotheses are presented in Section 5.

1.2 Project Purpose

The purpose of NCHRP Project 8-50 was to:

- Describe those factors that appear to be central to a strong, effective linkage between plans and programs, and those factors that threaten the linkage;
- Gauge which factors are considered to be most important (or damaging) in the opinion of practicing planners and program managers;
- Gauge how widely key factors exist in current state and regional planning and programming processes; and
- From this assessment, provide guidance on steps that might be taken to strengthen supportive factors and minimize those that may weaken the planning-programming linkage.

1.3 Approach

The project proceeded through two phases. In Phase I, the research team developed a comprehensive typology of factors that may influence, positively or negatively, the linkage between programming and long-range plans. This typology was developed through three activities undertaken in parallel:

- A number of experts in the field were consulted, including practicing state and local planners and programming managers as well as nationally known observers, analysts, and researchers. In addition, each member of the NCHRP Project 8-50 panel was interviewed. All were asked to identify factors they believe to be most important in establishing and maintaining a strong planning-programming linkage. Their thoughts and ideas were synthesized as a starting point for the project.
- Recent literature on planning, programming, and priority-setting practices was reviewed to further expand perspectives on what factors are important in creating a strong linkage.
- Surveys were attempted with state DOTs as well as selected MPOs, regional planning agencies (RPAs), and transit authorities to gather information on specific aspects and the dynamics of planning-programming linkages at the state and regional levels.

The result of these activities provided an initial critical review of current practice and perspectives that was used as

the basis for the more detailed, in-depth interviews of individual agencies undertaken in Phase II of the project.

In Phase II, candidate agencies were selected for in-depth interviews on their planning and programming processes. While the focus was on state DOT processes and procedures, representatives of associated MPO staff members were interviewed in several cases.

Six state DOTs—Colorado, Kentucky, Minnesota, Missouri, Oregon, and Vermont—were the subject of detailed interviews carried out largely in the early months of 2006. These states were selected based on familiarity with their planning and programming processes and preliminary discussions with agency staff around several broad criteria, including:

- Population and developmental character of the state;
- Geopolitical boundaries, i.e., number and sizes of urban areas;
- Governance traditions in DOT and MPO relationships;
- Relative level of sophistication in technical planning and related processes;
- Preliminary understanding of existing or emerging plan-program linkage;
- Preliminary understanding of how technical versus politically based factors entered into planning and programming processes; and
- General agency capacity to manage and carry out planning and programming activities.

Part of the intent in selecting candidate states was to engage some that are generally considered to be on the cutting edge with respect to planning and programming processes and procedures, and some that may be behind the curve by their own admission.

Detailed documentation of the interviews was compiled and summaries prepared for comparison and analysis by the research team. To broaden the project, the research team expanded the assembly of information on planning and programming processes beyond the six state DOTs interviewed to include brief observations on the activities and initiatives under way in a number of other states with respect to the factors identified earlier in the study.

1.4 Organization of the Report

This report provides findings and conclusions from both phases of NCHRP Project 8-50. It serves as a point of departure for both state DOTs and MPOs seeking ways to strengthen the link between long-range planning, project-level prioritization, programming, and resource allocation. Findings and conclusions of the project are presented in the following sections:

- **Section 2** reviews the federal impetus for establishing and maintaining the link between long-range plans and programs and provides a preliminary definition of linkage and how it might be measured.
- **Section 3** presents the factors that emerged from the study as important to establishing and maintaining a strong link between long-range plans and programs. It summarizes survey responses in terms of factors considered most important, those most in evidence, and those least in evidence in current agency processes.
- **Section 4** summarizes the conclusions drawn from the detailed interviews of the six state DOTs and associated stakeholder organizations and also briefly describes actions and initiatives in other states that parallel the activities noted in the interviews.
- **Section 5** presents the results of the project in terms of emerging themes in the planning-programming continuum as well as a summary of reactions to these emerging themes taken from presentations before the TRB Committee on Statewide Multimodal Transportation Planning (ADA10) and the TRB Committee on Transportation Programming, Planning, and Systems Evaluation (ADA50) at the TRB 2006 Joint Summer Meeting held July 9 through July 11, in San Diego, California.
- **Section 6** contains recommendations and guidance on steps that might be taken to strengthen those factors that enhance the linkage of long-range plans and programs as well as steps to minimize the impact of conditions that may weaken the linkage.
- **Appendixes** list expert interviewees (A), present the survey instruments (B), provide detailed survey results (C), incorporate agency interview highlights (D) and provide selected references (E).

SECTION 2

Context: "Assuming" the Link

At the core of the linkage issue is longstanding federal law and regulation that governs transportation planning and programming at both the statewide and metropolitan (MPO) levels. The federal statutory and regulatory language on planning and programming has several important characteristics:

- It applies to both the federal highway and transit planning and programming through nearly identical language affecting both sets of modal programs;
- It defines the scope (substance and timeframes) as well as the content of plans and programs;
- It defines financial constraints in the planning-programming process to encourage a focus on true priorities and achievable investments, particularly in the case of MPOs; and
- It describes varied roles and types of interaction for the states, MPOs, local elected officials, and citizens in plan and program development.

More specifically, federal law and regulation requires that ". . . each project shall be consistent with the long-range transportation plan. . . ." (*1*)

The precise definition of "consistent," however, is largely left to broad interpretation by state and local participants, resulting in varying degrees of linkage between plans and programs. Judgments on whether a program of projects is, in fact, "consistent" with the long-range plan typically are made in several ways:

- Through the annual STIP/TIP updating and revision process, where project justifications are required, including references to the plan origin of projects;
- During the public participation process required by federal law where priorities for projects in a STIP or TIP may be discussed and resolved;
- Through the federal grant approval or expenditure authorization processes, where certification of consistency is required; and
- During the periodic federal planning "Certification Reviews" carried out by the FHWA and the FTA.

Despite the requirements and checkpoints established for consistency, widely varied arrangements and processes have evolved at both the statewide and regional level for establishing linkage between plans and programs. More than anything else, these variations tend to reflect longstanding differences in philosophies of governance, locally and statewide. As a result, the process, as overseen at the federal level, historically has been tolerant and accepting of variations in plan-program linkage. The rationale for this flexibility is obvious: "Given that many factors can influence how decisions occur and why certain choices are made, it is difficult to provide a general description of decision-making that applies to all situations" (*2*). A key difficulty, however, is that a policy-oriented plan can be so general or vague that it is hard to show that specific projects are consistent with the plan.

2.1 What Constitutes Linkage?

In the simplest terms, the linkage that is desired between an LRTP and a program of projects for short-term investment can be defined as

the degree to which progress toward long-range policies, goals, and objectives is being made with funds committed to current projects and improvements

or

the degree to which current funding commitments reflect the stated policies, goals, and objectives of the long-range plan.

Through much of the evolution of the Federal Joint Planning Regulations that prescribe the interrelationship of plans and programs, long-range plans were presented as a list, along with descriptions and justifications, of individual

projects and/or investments in road capacity that were needed to address forecast "needs," defined as increases in trip making and travel based on population and economic forecasts.

The linkage between plans and programs under this model was relatively easy to evaluate. The shift of a proposed project from the LRTP to the program of projects could literally be seen and dated, and was documented in detail through the formal actions necessary to comply with federal regulations and facilitate the flow of federal funds.

Over time, the steady increase in needs and persistent limitations on available funding in most states and regions led to increases in the number of projects relegated to the out-years of the long-range plan. Increasingly, these out-year improvements were repeatedly deferred as new, more immediate demands for available funds constantly arose, priorities shifted, and/or project cost estimates increased. These mounting backlogs led to several different responses, including unsuccessful efforts to enact state revenue increases or new financial leveraging strategies large enough to address or clear the project backlogs, as well as "streamlining" of "project development" processes to move more quickly to obligate available capital funds.

A more common response, however, has been to alter the scope and content of long-range plans. Instead of developing 20-year plans composed of specific proposed improvements, long-range plans increasingly have been recast as policy documents, i.e., statements of goals and objectives, policies to pursue them, and measures to chart progress along the way. This shift in long-range plan content has had several positive impacts:

- It has allowed a dialogue on long-term future transportation directions of a state or region to be pursued and agreement reached without the need to "buy" consensus with the commitment of funds to specific projects in specific locations;
- It has created room to bring broader statewide and regional economic, social, and environmental aspirations into the transportation planning process, to better integrate them and to illuminate tradeoffs that are inevitable, without necessitating shifts in project-level fund allocation; and
- It has forced greater attention to the objective consequences of varied types of investments and projects and the introduction of more sophisticated analytical techniques with an increased focus on performance measurement as a means of gauging the extent to which objectives are being met.

While the consequences of DOTs moving to policy-oriented LRTPs are positive, the link between plans and programs has been made more indirect and more difficult to discern and measure as a result. At the MPO level, long-range planning evolved in sophistication to typically encompass forecasting future population and economic activity, translating the forecasts into anticipated traffic levels through the use of increasingly sophisticated models, and using the models to anticipate the roadways that would be overloaded with traffic by the plan target year. For some time, MPO plans have also attempted to balance multiple modes.

To trace or infer a strong link between a plan and a program now requires evidence of several "intermediate" characteristics:

- A clear statement of desired goals or plan outcomes,
- A set of measures to determine progress towards those outcomes,
- Data systems to allow actual measurement of progress,
- Use of performance measures in project evaluation and prioritization,
- Consideration of performance in allocation of funds,
- Analysis and reporting of results, and
- Feedback into subsequent cycles of planning and programming.

Absent this intermediate set of characteristics, it is difficult to gauge the strength of linkage between a policy-based plan and a program of projects with committed funding.

In the case of MPOs, large regional plans, such as the Chicago Area Transportation Study (CATS), led development of policy and translated that into a program of road and transit projects. At the same time, state agencies were typically highway departments primarily responsible for intercity roadways. Consequently, DOT "plans" began as lists of projects often selected via the "engineering judgment" of senior officials or the political judgment of elected officials, or a mix of the two.

Because of the scope of state highways and the difficulty of modeling intercity highway networks and other factors, states were slower than MPOs to develop analytically rigorous planning processes focused on broader outcomes of proposal investments.

2.2 Linkage in the Traditional Planning Literature

A wide range of material drawn from traditional sources was identified as relevant to the issue of planning-programming linkage. In addition, recent planning, programming, and related documents from 13 states and 4 MPOs were reviewed. While the literature provided useful insights for the project, the research team found material from specific states and locales to be somewhat more useful, as described in Section 4.

Traditional planning literature addresses the issue of planning-programming linkage from a number of different perspectives:

- The linkage of planning to programming is widely acknowledged to be critical, particularly since the enactment of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and, subsequently, the Transportation Equity Act for the 21st Century (TEA-21) in 1998;
- A plan-program link is generally considered to exist despite varied circumstances, largely because it is a federal requirement that is assumed to be satisfied as a de facto matter in all but the most extreme cases;
- There is limited treatment in the literature of the broader bases for planning-programming linkage in actual practice; and
- More often, the traditional literature:
  - Addresses aspects and mechanics of the planning, programming, prioritization processes, or capital investment decision making somewhat independently, as discrete activities;
  - Examines relevant key subtopics independently and in specific detail (e.g., "multimodal" planning processes, performance measurement typologies and definitions, prioritization criteria and processes, and increasingly rigorous quantitative evaluation processes or algorithms for data-driven impact and tradeoff analyses); or
  - Describes unique current or planned methodologies being tried in one specific state, region, department, or agency.

As part of research on institutional change done for AASHTO, Cambridge Systematics, Inc. suggested that statewide planning might influence investment decision making through any of three channels of activity:

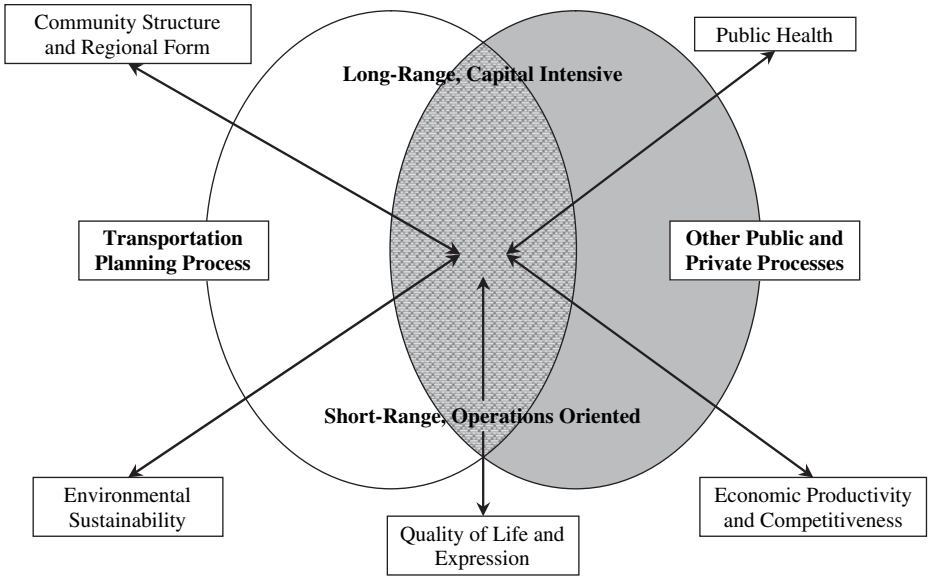
- Through program and project priority setting and budget development activities;
- Through policy development activities; and
- Through information sharing and management functions (*3*).

In addition to the more traditional planning literature, several emergent issues and topics being examined today directly or indirectly heighten the emphasis on the planning-programming linkage and its impact on priority setting and budgeting. Among the most important of these topics are:

- **Asset management concepts and tools** that have expanded beyond concern over optimizing asset condition, traffic flow, and investment levels to incorporate policy-driven tradeoff analysis for the full range of potential investments; i.e., preservation, operating improvements, and system expansion (*4*);
- **Operations and management of the system** as an emerging core mission for transportation planning and implementing agencies at all levels (*5, 6*);
- **Performance-based planning** that combines interest in broadly defined, community-wide outcomes as well as program-level outputs and seeks to relate strategic policy direction, long-term goals, short-term objectives, measures of success and performance, and target levels that can be monitored and reported on a regular basis (*7*);
- **Customer orientation** that elevates the "quality of the customer's travel experience" to a high-order strategic interest, forcing an organization to be sensitive to more than design and engineering standards as a basis for investment (*8, 9*); and
- **The importance of collaboration**, formally and informally, in arriving at and sustaining consensus on vision, goals, and measures of success and priorities (*10, 11, 9*).

While these topics are often discussed as discrete issues, they invite or demand a degree of integration across the full spectrum of decision-making steps—plan development, program development, prioritization, and budgeting activities. In so doing, they help to move the discussion of linkage and consistency beyond the level of generalities to a set of dimensions and activities that can be objectively evaluated as factors in the strength of planning-programming linkage (*12, 3*). Within recent traditional literature, several major themes have been cited and/or recur that were important throughout the project:

- Funding availability and constraints are a fact of life and should trigger high-level allocation decisions that require both a clear, consistent policy rationale as well as system performance rationales.
- The availability of and capacity to use state-of-the-art analytical tools (along with their often significant data requirements) can be invaluable in clarifying the consequences of optional plan elements, actions, and programmed projects (*13, 14, 15*).
- Performance as a basis for investment decisions must balance and ideally integrate the pursuit of broad community-wide goal achievement with pursuit of system-specific operational goals and targets, as illustrated in Figure 1 (*5*).
- Introducing distinctions between broad categories of investments—preservation, operational improvements, and system expansion—can provide a first-order means of assessing needs, examining tradeoffs, setting priorities, and sharpening investment policies.



Source: Poorman (*5*).

Figure 1. Representation of a holistic transportation planning process.

- There are important roles for centralized and decentralized staff and policymakers at each step that heighten responsiveness to real (and perceived) need and build and sustain trust in the allocation of scarce resources (*4*).
- Persistent funding constraints force clearer definition of which elements of the network represent a priority concern of the state (or metropolitan region), but priorities emerging simply because funding is constrained do not necessarily translate into projects that best address objective needs.
- Extensive and sustained communication establishes and maintains a basic level of knowledge among stakeholders and decision makers who shift continuously in and out of the planning-programming process (*5*).

Not surprisingly, these factors and related observations echo to a considerable degree those suggested by the experts as being critical to create and maintain a strong, effective link between planning and programming.

SECTION 3

Identifying Factors that Support the Planning-Programming Linkage

To frame the assessment of current planning-programming linkages, the research team:

- Held exploratory conversations with more than 20 practicing experts in the transportation planning field, including members of the NCHRP Project 8-50 panel;
- Surveyed state DOTs as well as a select group of MPOs and RPAs; and
- Conducted detailed interviews with staff members of six state DOTs and selected MPOs and RPAs.

The sections that follow summarize findings from each activity.

3.1 Views from Practicing Experts

Expert interviewees are listed in Appendix A. A wide range of substantive opinions and observations were provided by the interviewees, suggesting the complexity and variability that is inherent in the planning-programming continuum. The most significant observations from interviewees are highlighted in Table 1 and include references to 39 specific factors or conditions that are thought to be important in creating and sustaining a strong link between plans and programs. The factors create a consistent and overlapping set of dimensions or yardsticks that are useful in exploring the extent to which plans and programs may be linked within states and within regions. Each factor listed can be considered a response to the statement,

"A stronger link between planning and programming results when ___(factor)___."

That is, the factor is a necessary precondition for a clear, strong link between plans and programs.

The factors listed in Table 1 were collapsed and combined into the following broad categories to provide a framework for the subsequent surveys and interviews:

- The **structure and content** of plan documents provide comprehensive and clearly stated goals, objectives, and measures;
- **Data quality and analysis techniques** are strong;
- Planning and programming functions are closely tied in the **organizational structure**;
- **Communications** (internal and external) are thorough and open throughout the planning-programming process;
- **External influences** (non-transportation-related) are well understood and addressed openly and effectively, e.g., land use, economic development, and other public and private infrastructure policies, plans, and programs;
- **Leadership,** both political and professional, is knowledgeable about and committed to a thorough and objective planning and programming process; and
- Planning and programming **"cultures"** work in synch.

3.2 Summary of Survey Results

To determine the **importance** of these factors and their **presence (or absence)** in the state DOT and MPO planning and programming processes, surveys were conducted of both state and regional agencies. The survey approach and results are summarized in the sections that follow.

The nearly 40 factors noted in Table 1 were collapsed and combined into several overarching categories as noted. Survey respondents were asked to:

- Respond to a series of **general, open-ended questions** about their planning and programming processes;
- Indicate the **importance of major categories** of factors in strengthening the planning-programming linkage;
- Indicate the **importance of each specific factor** within the categories; and
- Indicate the **extent to which each factor is present** (or absent) in their planning and programming processes.

Appendix B contains copies of the two survey instruments. Additional detail on survey responses is provided in Appendix C. Although survey returns were somewhat limited, they

Table 1. Factors identified by expert practitioners as important for strengthening the planning-programming linkage.

A stronger link between planning and programming results when…
1. There is a recognizable hierarchy in planning beginning with a credible, well recognized, and broadly participatory regional comprehensive plan.
2. There is a high level of coordination between transportation and other agencies responsible for guiding other public policies and investments that impact directly or indirectly on transportation decision making and/or the effective functioning of transportation services and facilities; e.g., public works agencies, environmental agencies, economic development agencies, community developments, health and human service agencies, etc.
3. Policy direction from outside agencies does not contradict or confound the transportation planning-programming process.
4. There are consistent "future" visions across public agencies and public officials, elected and career; and implementers are "signed on" to the goal framework.
5. There is regular feedback among stakeholders about the approach to investment decision making, the rationales, and the expected and actual outcomes and consequences.
6. The regular cycle of new political leaders is adequately informed ("trained") and knowledgeable in the process and mechanics of planning and programming transportation investments.
7. Transportation agencies maintain a high level of knowledge and experience among staff responsible for planning and programming functions.
8. Senior professional staff/leadership provides sustained support to the LRTP scope and vision.
9. Politically motivated manipulation of the programming process is minimized.
10. Political leadership is involved in and has a clearly defined responsibility throughout the planning and programming process.
11. Political leadership is thoroughly informed on the relative benefit and value of specific actions and investments throughout the planning-programming process.
12. Board and political power and authority is limited in its ability to override objective analysis of needs and priorities.
13. The orientation of staff, policymakers, and stakeholders is stronger to policy outcomes as a base for action than to individual projects as a base for action.
14. Recognition that some level of politically based decision making is inevitable and appropriate.
15. There is ability in the planning-programming process to be flexible in response to local conditions and circumstances.
16. Long- and short-range plans provide specific policy guidance to investment decision making.
17. The LRTP has a discrete short-range element to focus real investment decisions and provide responsiveness to changing conditions and circumstances.
18. The planning-programming process is well defined and the role of data and technical analysis are clear throughout.
19. There is minimal duplication of effort in planning and the environmental processes.
20. The programming function and activity is based on full knowledge of the planning process and products.
21. There is regular monitoring and reporting of the consequences and outcomes of programmed investments.
22. There is flexibility to vary treatment levels to meet changing conditions and circumstances irrespective of established targets and thresholds used to develop plans and programs.

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did provide a useful base of information as well as a profile for carrying out subsequent detailed field interviews.

3.2.1 State DOT Responses

Eighteen of fifty state DOTs completed and returned surveys (31 percent response). Of these, 10 are predominantly rural in character with one or more small or mid-sized urbanized areas (Alabama, Iowa, Kansas, Kentucky, Nebraska, North Dakota, Rhode Island, Tennessee, Vermont, and Wyoming). Five states have single large urbanized areas (Arizona, Colorado, Michigan, Minnesota, and Oregon). Three states have multiple large urbanized areas (Florida, Pennsylvania, and Texas). Oregon provided four survey responses and thus, in the analysis that follows, has multiple listings.

Table 1. (Continued).

A stronger link between planning and programming results when…
23. Analytical tools are available to gauge the consequences of tradeoffs in resource use and project prioritization.
24. Performance measures tied to plan goals are used to define needs and assess the extent to which policy and project alternatives meet performance goals, thresholds, or targets to align plans with strategies and goals.
25. Objective assessments of "real" needs precede resource allocation decisions.
26. There are clear priority-setting procedures for each type of project or activity.
27. Outcomes drive policy and investment decisions.
28. A clear, simple link is established between plan goals, priority-setting processes, and overarching policy themes.
29. There can be a link defined at the planning level between land use and transportation decision-making processes.
30. Preservation funding can be "taken off the top" if and when preservation is declared a top priority.
31. Preservation can be performed to varying levels/standards in response to conditions and circumstances across various portions of the network.
32. Technical/analytical justification for investment is strong throughout the planning process and implementing agencies "own" plans.
33. Funding allocation and performance are based on outcome measures.
34. Fund allocation rules map clearly to the LRTP goals and objectives.
35. Planning and programming functions are in proximity in the organizational structure and report through a single senior manager.
36. There are clear lines of authority and sustained and comprehensive communications between relevant organizational units responsible for planning and programming regardless of organizational structure.
37. Programming responsibility is carried out by and through the planning function/unit, not by the financial/budget units of the organization.
38. There are realistic financial constraints built into the planning process.
39. Financial constraints do not act to retard or limit planning activity.

Importance of Broad Categories of Linkage Factors

Table 2 summarizes how respondents from state DOTs ranked the seven broad categories of factors noted earlier. The shaded cells identify the single highest and lowest ranked categories.

Among the broad categories of linkage factors, opinions varied widely among state DOT respondents over which were most important in linking plans and programs. All seven categories received both first and last place votes. The variation may point to the strong role that significant local historic and contextual factors play in the planning-programming process; i.e., longstanding philosophies of governance as well as variations in political traditions, planning traditions, intergovernmental relationships, etc., survive as strong influences even after 30 years of federal guidance on the planning-programming process. Key findings from the ranking process are summarized below:

- **Categories most often cited as *most important*** (number of votes ranking category as number one).
  - The structure and content of plan documents provide comprehensive and clearly stated goals, objectives, and measures (10);
  - Communications (internal and external) are thorough and open throughout the planning-programming process (9); and
  - Political and professional leaders are knowledgeable about and committed to a thorough and objective planning-programming process (7).
- **Categories most often cited as *most important*** (number of votes ranking category as number one or number two).
  - The structure and content of plan documents provide comprehensive and clearly stated goals, objectives, and measures (10 and 1);
  - Communications (internal and external) are thorough and open throughout the planning-programming process (9 and 2);
  - Political and professional leaders are knowledgeable about and committed to a thorough and objective planning-programming process (7 and 4); and
  - Planning and programming functions closely tied in the organizational structure (2 and 9).

Table 2. State DOT ranking of major categories of linkage factors.

Category	States Ranking a Category as						
	1 (Highest)	2	3	4	5	6	7 (Lowest)
1. Comprehensive and clearly stated LRTP goals, objectives, and measures.	**10**	**1**	**1**	**4**	**1**	**1**	**3**
Small urban and rural states	Nebraska North Dakota Rhode Island Wyoming Iowa Vermont	Kentucky	Tennessee	Alabama			Kansas
States with one major urbanized area (UZA)	Michigan Minnesota Oregon			Oregon Oregon	Oregon	Arizona	Colorado
States with multiple major UZAs	Pennsylvania			Texas			Florida
2. State-of-the-art data quality and analysis techniques.	**1**	**6**	**3**	**1**	**3**	**3**	**4**
Small urban and rural states		Alabama Nebraska Wyoming	Iowa	Kentucky	Tennessee Vermont	Kansas	North Dakota Rhode Island
States with one major UZA		Oregon Colorado Minnesota	Arizona Michigan			Oregon Oregon	Oregon
States with multiple major UZAs	Pennsylvania				Texas		Florida
3. Planning and programming functions closely tied in the organizational structure.	**2**	**9**	**5**	**1**	**3**	**1**	**1**
Small urban and rural states	Alabama	Rhode Island Iowa Nebraska North Dakota	Vermont	Wyoming	Kansas	Tennessee	Kentucky
States with one major UZA	Oregon	Oregon Arizona Minnesota	Oregon Colorado Michigan		Oregon Oregon		
States with multiple major UZAs		Pennsylvania Florida	Texas				

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Table 2. (Continued).

Category	States Ranking a Category as						
	1 (Highest)	2	3	4	5	6	7 (Lowest)
4. Thorough, open communications (internal and external) throughout the planning-programming process.	**9**	**2**	**3**	**2**	**2**	**3**	
Small urban and rural states	Iowa Kansas Nebraska		Alabama	Tennessee Vermont	Wyoming	Kentucky North Dakota Rhode Island	
States with one major UZA	Alabama Colorado Michigan Minnesota	Oregon Oregon	Oregon		Oregon		
States with multiple major UZAs	Pennsylvania Texas		Florida				
5. External influences (non-transportation-related) are well understood and addressed openly and effectively.	**3**	**2**	**5**	**3**	**1**	**5**	**2**
Small urban and rural states	Nebraska	Iowa Vermont	Kentucky	Alabama Kansas North Dakota	Rhode Island		Tennessee Wyoming
States with one major UZA	Minnesota		Arizona Michigan Oregon Oregon			Colorado Oregon Oregon	
States with multiple major UZAs	Pennsylvania					Florida Texas	
6. Political and professional leaders are knowledgeable about and committed to a thorough and objective planning and programming process.	**7**	**4**	**2**	**4**	**2**	**1**	**1**
Small urban and rural states	Kentucky Nebraska	Alabama Iowa Tennessee	North Dakota Kansas	Rhode Island		Wyoming	Vermont
States with one major UZA	Minnesota Oregon Oregon	Michigan		Arizona Colorado Oregon	Oregon		
States with multiple major UZAs	Pennsylvania Texas				Florida		

Table 2. (Continued).

Category	Highest Ranking 1	2	3	4	5	6	Lowest 7
7. Planning and programming "cultures" work in synch.	**4**	**3**	**4**	**4**	**3**	**1**	**2**
Small urban and rural states	Nebraska Tennessee	Iowa Kansas	Alabama Rhode Island Wyoming		Kentucky North Dakota	Vermont	
States with one major UZA	Minnesota		Oregon	Arizona Michigan Oregon	Colorado		Oregon Oregon
States with multiple major UZAs	Pennsylvania	Texas		Florida			
Added by Florida DOT: **Clear understanding of roles/responsibilities of all stakeholders at all levels**	Florida						
Total Ranks Assigned	**36**	**27**	**23**	**19**	**15**	**15**	**11**

Note: Multiple listings are included for Oregon, the only state to provide responses from both planning and programming staff, as was suggested in the survey material. Varied responses from *within* Oregon DOT suggest that opinions about linkage factors vary significantly within as well as across DOTs.

- **Categories most often cited as** least important *(number of votes ranking category as number six or number seven).*
  - State-of-the-art data quality and analysis techniques (3 and 4); and
  - External influences (non-transportation-related) are well understood and addressed openly and effectively (5 and 2).

Views on Linkage

The observations that follow highlight state DOT responses to other more general questions:

- **Virtually all state DOT respondents "strongly agree" on what makes investments effective.** "Transportation investments are most effective when there is a clear, direct link between long-range plans and projects programmed in the STIP/TIP." The exceptions were smaller, more rural states that "agree" but not "strongly."
- **Respondents were split on the strength of the planning-programming linkage in their own agencies.** Roughly half (eight) responded that there are "consistent strong links" in their states/regions/agencies (Colorado, Florida, Michigan, Minnesota, Oregon, Rhode Island, Tennessee, and Texas). Roughly half (nine) responded that links were "sometimes evident" (Alabama, Arizona, Iowa, Kansas, Nebraska, North Dakota, Oregon, Pennsylvania, and Wyoming). Two smaller, rural state DOTs responded that there was a "weak" linkage (Kentucky and Vermont).
- **Responses were split over how directly programs are linked to plans in their own agencies.** Roughly half (eight) responded that "programs are directly linked" (Colorado, Florida, Minnesota, Nebraska, Oregon, Rhode Island, Tennessee, and Texas). Roughly half (eight) responded that "programs are sometimes linked," or were "neutral" as to linkage (Alabama, Arizona, Iowa, Kansas, Michigan, North Dakota, Oregon, and Pennsylvania). Three smaller, rural state DOTs responded that there was a "weak" plan-program link (Kentucky, Vermont, and Wyoming).

Respondents were also asked to describe particular aspects of their planning and programming processes in short answers. The responses were varied in detail and clarity and, therefore, difficult to synthesize. Patterns emerging from the short-answer questions are summarized below. Without attribution, they suggest that:

- Some significant differences exist between DOT planning and programming processes in states that have predominantly small urban and rural areas and DOTs in states that have one or more major metropolitan areas; and
- Small urban and rural state DOTs appear to be less involved in pushing the planning-programming linkage beyond measures of system condition and traffic flow, toward broader outcomes.

The following paragraphs provide detail on answers to specific questions.

How are planning and programming functions organized in your agency? What unit is responsible for project selection? Planning and programming responsibilities are combined under a single senior official in roughly half the responding states and performed by separate divisions/bureaus in about half. In at least two cases (Florida, Minnesota), much of the planning and programming responsibility is delegated to district offices based on detailed, centralized guidance.

Does the LRTP include projects or is it a policy document? Is it amended frequently? LRTPs are "policy" documents or moving in that direction in all but four states, including all small urban and rural state DOTs. Five state DOTs indicated that LRTPs include some specific/major projects (Arizona, Colorado, Michigan, Minnesota, and Rhode Island). State LRTPs are not frequently or regularly amended with a single exception where updates may occur quarterly.

Are programmed projects based on measures or criteria from the LRTP? To what degree do programmed projects tie back to your LRTP? All the DOTs in states with large metropolitan areas replied "yes" or have intentions to do so. The small urban and rural DOTs replied half "yes" and half "to some degree."

What role do Division/District Engineers/Planners have in planning and programming? Responses varied: "technical input" and "advisory" roles were most commonly mentioned. Their focus tends to be on preservation, maintenance, and operations elements for the upcoming year.

What are the impacts of cost or schedule changes on the program? What is the role of the LRTP in program changes? Funding problems and delays are cause for major program changes. No state DOT reported that LRTPs play a significant role in making these changes.

Can changes in LRTP process improve programming decisions? What changes? There was near unanimous agreement that changes in LRTP process can make programming better. Ideas mentioned by more than one state DOT included clearer performance measures and better needs analysis. Other improvements mentioned:

- Better estimates of impacts in funding changes across broad project categories,
- Better economic impact analysis,
- Improved financial forecasting,
- Use of asset management concepts and tools,
- More detailed documentation and analysis on the subsystem level and/or corridors,
- Better use of National Environmental Policy Act (NEPA) framework in plan development, and

- Better tracking of project delivery (implementation) and scope adherence.

Are performance measures used in LRTP development? In programming? Regarding LRTPs, small urban and rural states were split on the use of performance measures in LRTP development. One-third said "yes"; one-third said "just starting" or "in the future"; one-third said "no." States with large metropolitan areas uniformly responded "yes." Regarding programming, the small urban and rural states tend to focus on traffic flow and condition measures, not necessarily outcome measures. States with large metropolitan areas uniformly said "yes," programming is based on the application of performance measures.

Experience suggests that there is not a clear or uniform understanding of what constitutes a true performance measure, e.g., a ratio of outputs or outcomes to inputs. Many view one-dimensional descriptive characteristics of the system (e.g., crashes) or changes in those descriptors over time as measures of performance.

3.2.2 MPO and RPA Responses

Four of fourteen MPOs recommended by the Association of Metropolitan Planning Organizations (AMPO) completed and returned surveys (29 percent response). All serve large urbanized areas (the Atlanta Regional Commission [ARC], the Mid-American Regional Council [MARC] in Kansas City, the Metropolitan Council in the Twin Cities, and the Metropolitan Transportation Commission [MTC] in San Francisco).

Two of eleven RPAs recommended by the National Association of Regional Councils completed and returned surveys (18 percent response): the Roanoke Valley–Allegheny Regional Commission (RVARC) in Roanoke, Virginia, and the Two Rivers–Ottauquechee Regional Commission (TRORC) in Woodstock, Vermont.

Ranking the Importance of Broad Categories of Linkage Factors

MPO and RPA respondents were asked to rank the seven broad categories of factors affecting the planning-programming linkage in order of importance. The opinions of MPO/RPA respondents varied as widely as did the opinions of state DOT respondents.

Results were highly consistent with state DOT rankings; the categories ranked highest were:

- The structure and content of plan documents provide comprehensive and clearly stated goals, objectives, and measures;
- Communications (internal and external) are thorough and open throughout the planning-programming process; and
- Political and professional leaders are knowledgeable about and committed to a thorough and objective planning-programming process.

As was the case for state DOTs, the wide variations in the importance of broad factors among MPOs and RPAs may point to the strong role that locally significant historic and contextual factors play in planning and programming processes; i.e., longstanding philosophies of governance, varied political traditions, varied planning traditions, and varied dynamics in intergovernmental relationships shape the planning and programming processes differently from region to region, etc.

Table 3 summarizes how respondents from MPOs and RPAs ranked the categories. The shaded cells identify the most significant groupings of responses. Patterns for the ranking process are summarized below:

- **Categories most often cited as *most important*** (number of votes ranking category as number one)
  - The structure and content of plan documents provide comprehensive and clearly stated goals, objectives, and measures (3); and
  - Communications (internal and external) are thorough and open throughout the planning-programming process (3).
- **Categories most often cited as *most important*** (number of votes ranking category as number one or number two)
  - Communications (internal and external) are thorough and open throughout the planning-programming process (3 and 3);
  - The structure and content of plan documents provide comprehensive and clearly stated goals, objectives, and measures (3 and 0); and
  - Political and professional leaders are knowledgeable about and committed to a thorough and objective planning and programming process (2 and 1).
- **Categories most often cited as *least important*** (number of votes ranking category as number six and number seven)**.**
  - There was no pattern of concentrated low rankings.

Views on Linkage

The observations that follow highlight MPO and RPA responses to other more general questions:

- **Among responding MPOs and RPAs there is a strong belief that the planning-programming linkage is important** but the linkage is only clear and direct in half the responding agencies. All six MPO and RPA respondents "strongly agree," that "Transportation investments are most effective when there is a clear, direct link between long-range plans and projects programmed in the STIP/TIP."

Table 3. MPO and RPA ranking of major categories of linkage factors.

Category	MPOs and RPAs Ranking a Category as						
	1 (Highest)	2	3	4	5	6	7 (Lowest)
1. Comprehensive and clearly stated LRTP goals, objectives, and measures.	**3**		**1**	**1**	**1**		
MPOs	MTC MARC		ARC		Met Council		
RPAs	TRORC			RVARC			
2. State-of-the-art data quality and analysis techniques.		**2**	**2**		**1**		**1**
MPOs		ARC MTC	MARC				Met Council
RPAs			TRORC		RVARC		
3. Planning and programming functions closely tied in the organizational structure.	**2**		**3**		**1**		
MPOs	Met Council MTC		ARC		MARC		
RPAs			TRORC RVARC				
4. Thorough, open communications (internal and external) throughout the planning and programming process.	**3**	**3**					
MPOs	ARC MTC	Met Council MARC					
RPAs	RVARC	TRORC					
5. External influences (non-transportation-related) are well understood and addressed openly and effectively.	**1**		**2**	**1**	**1**	**1**	
MPOs			Met Council MARC	ARC	MTC		
RPAs	TRORC					RVARC	

Table 3. (Continued).

Category	MPOs and RPAs Ranking a Category as						
	1 (Highest)	2	3	4	5	6	7 (Lowest)
6. Political and professional leaders are knowledgeable about and committed to a thorough and objective planning and programming processes.	**2**	**1**	**1**		**1**	**1**	
MPOs	MARC		MTC		ARC	Met Council	
RPAs	TRORC	RVARC					
7. Planning and programming "cultures" work in synch.	**1**			**3**			**1**
MPOs	MTC			ARC Met Council MARC			
RPAs							RVARC
Added by MTC:							
Stakeholder groups are part of the process.	MTC						
LRTP and program are prepared through joint efforts of all agencies.	MTC						

MTC = Metropolitan Transportation Commission, MARC = Mid-American Regional Council, ARC = Atlanta Regional Commission, Met Council = Metropolitan Council, TRORC = Two Rivers–Ottauquechee Regional Commission, RVARC = Roanoke Valley–Allegheny Regional Commission

- **MPOs and RPAs were split on the strength of the planning-programming linkage in their regions.** Two of the MPOs revealed "consistent, strong links" in their regions (Met Council and MTC). Two MPOs and both RPAs indicated the link was only "sometimes evident."
- **MPOs and RPAs were split on how directly programs are linked to plans in their own agencies.** Three MPOs reported that there is a "direct link" (ARC, Met Council, and MTC). MARC and both RPAs noted "programs are sometimes linked" or were "neutral" in their responses.

Respondents were asked to describe particular aspects of their agencies' planning and programming processes in short answers. The responses are varied in detail and clarity and are, therefore, difficult to synthesize. In addition, the responses are generally too limited in number and in scope to draw clear conclusions. There appear to be consistent differences, however, in the responses from MPO respondents in major metropolitan areas and RPA respondents from small urban and rural areas, a result that should not be unexpected.

The following paragraphs provide detail on answers to specific questions.

How are planning and programming functions organized in your agency? What unit is responsible for project selection? Responses indicated a split between joined and separated planning and programming responsibilities in both MPOs and RPAs.

Does the LRTP include projects or is it a policy document? Is it amended frequently? Almost all regional LRTPs had both policies and projects except one, which was a policy document (TRORC).

Are programmed projects based on measures or criteria from the LRTP? All but one MPO/RPA indicated programmed projects are taken from the LRTP.

To what degree do programmed projects tie back to your LRTP? All responding MPOs and RPAs indicated a strong tie from program back to plan.

What role do Division/District Engineers/Planners have in planning and programming? Responses varied considerably but in most cases the role of DOT District Engineers is limited in the MPO/RPA processes.

What are the impacts of cost or schedule changes on the program? What is the role of the LRTP in program changes? Cost changes are of most concern and inevitably result in delays and deferral; LRTPs are not helpful in addressing this issue.

Can changes in LRTP process improve programming decisions? What changes? Virtually all respondents respond "yes." Suggestions included stronger DOT commitment to the region's LRTP, clearer goals so they become self-fulfilling in programs, setting bounds on cost and scope shifts to clarify program, and more frequent updates on cost and schedule information.

Are performance measures used in LRTP development? In programming? All MPOs responded "yes" for planning. The response was mixed for programming. RPAs responded "no," with both citing facility condition as the primary issue in low-traffic areas.

3.2.3 Ranking the Importance of Individual Linkage Factors

The survey grouped two or more specific factors derived from Table 1 into eight broad categories (the seven categories discussed previously in Section 3.1 plus **process**). State DOT and MPO/RPA respondents were asked to:

- Rank the importance of each specific factor within the category, and
- Identify the extent to which that specific factor was (or was not) in evidence in their own planning and programming processes. (In describing whether various factors were evident in their process, respondents could reply "always," "frequently," "half the time," "rarely," or "never.")

Appendix C presents tables detailing survey findings from state DOT and MPO/RPA responses for individual factors as well as comments identifying where responses cluster, signaling possible targets of opportunity in strengthening the planning-programming linkage.

The following tables represent a synthesis of the survey findings detailed in Appendix C, indicating:

- Which individual factors are considered **most important**,
- Which individual factors are **most in evidence** among state DOTs and MPOs/RPAs, and
- Which individual factors are **least in evidence** today.

Linkage Factors Considered Most Important

Table 4 identifies both the broad categories of factors felt to be **most important** as well as the individual factors within each category that were felt to be most important.

Factors Most in Evidence in Current Practice

Table 5 indicates factors that are always or frequently part of current practices and processes in **at least half** of the responding state DOTs. Two observations stand out:

- All aspects of **process**, **organizational structure,** and **communications** identified earlier in the study are in evidence in half or more of the responding state DOTs; and
- One or more factors from all broad categories are in evidence in half or more of the responding state DOTs.

Table 4. Factors considered most important in the planning-programming linkage.

Most Important Categories[a]	Most Important Factors[b]
Structure and Content of Plans and Programs[c]	LRTP contains specific policy guidance for investment decisions.[d]
	A clear link exists between broad policy themes, LRTP goals, and priorities.[e]
Communications[c]	Clear, open communications exist between units responsible for planning, programming.[d]
	Regular dialogue and feedback occur between agency and stakeholders.[d]
Leadership	Senior professional leadership provides sustained support for the vision and the LRTP.
	Agency staff maintains a high level of knowledge and skill in planning and programming.
	Political leaders know and follow the planning-programming process.
Organizational Structure	Planning and programming functions are closely linked in the organizational structure.

[a] These categories were ranked *most important* (number one and/or number two) by at least half of the state DOT respondents.

[b] These factors were ranked *most important* within each of their respective broader categories by at least half of the state DOT respondents.

[c] Categories also ranked *most important* by half or more of the MPO/RPA respondents.

[d] Factors also ranked *most important* within the category by more than half the MPO/RPA respondents.

[e] Factor was ranked *most important* within the category by more than half the MPO/RPA respondents.

Table 6 provides the same view of MPO/RPA processes and indicates that:

- All aspects of **organizational structure** and **communications** identified earlier in the study are in evidence in half or more of the responding MPOs/RPAs; and
- One or more factors from all broad categories are in evidence in half or more of the responding MPOs/RPAs.

Factors Least in Evidence in Current Practice

Tables 7 and 8 provide a summary of findings in the opposite direction, i.e., linkage factors that were least in evidence among responding agencies. In the case of state DOT respondents, factors rarely or never evident were:

- Staff and policymakers focusing on outcomes of investment choices, rather than project advocacy;
- Four elements of plan content and structure, including:
  - A clear link between policy, LRTP goals, and priority setting;
  - Fund allocation factors based on performance measures reflecting LRTP goals;
  - A short-range LRTP element to guide programming; and
  - Performance measures based on goal-oriented outcomes.
- Two aspects of leadership:
  - Political leaders know and follow the planning-programming process; and
  - Policymakers understand the benefits of transportation investment.

From MPO/RPA respondents, two factors were noted as rarely or never evident within four of the six agencies responding:

- Strong technical/analytical justifications; and
- Political leaders that know and follow the planning-programming process.

The results indicate that, to a significant degree, state DOTs and MPOs/RPAs may be experiencing the same shortcomings in linking plans to programs. Half the responding MPOs/RPAs indicated that three of the four factors cited as not in evidence by state DOTs also are not in evidence in their regional processes.

Survey results provided insights for examining in detail the planning and programming processes of agencies selected for in-depth interviews. A summary of findings from the interviews is presented in Section 4.

Table 5. Linkage factors in evidence among half or more responding state DOTs.

Factor	Category
More than 80 Percent of DOT Responses Show Factor "Always or Frequently in Evidence"	
Clear, open communications exist between units responsible for planning and programming.	Communications
Regular dialogue and feedback occur between the agency and stakeholders.	Communications
Planning and programming are flexible to meet local needs.	Process
Agency staff maintains a high level of knowledge and skill in planning and programming.	Leadership
Programming is based on a full understanding of a policy framework, role of data, and technical analyses.	Process
Sixty to Eighty Percent of DOT Responses Show Factor "Always or Frequently in Evidence"	
Planning and programming functions are closely linked in the organizational structure.	Organizational Structure
Planning and programming steps and procedures are well-defined.	Process
Needs are assessed ahead of fund allocations.	Data and Analytics
There are clear procedures for setting priorities among major investment types.	Data and Analytics
Coordination is strong between transportation plans and plans of other agencies, stakeholders.	External Influences
Programming is done by the planning unit.	Organizational Structure
LRTP contains specific policy guidance for investment decisions.	Plan Content
Program financial constraints do not limit the LRTP scope.	Process
Some level of politically based decision-making is recognized as appropriate.	External Influences
Senior professional leadership provides sustained support for the vision and LRTP.	Leadership
Fifty to Sixty Percent of DOT Responses Show Factor "Always or Frequently in Evidence"	
Technical/analytical justifications are strong.	Data and Analytics
Target levels for preservation can vary among system elements.	Data and Analytics
LRTP contains performance measures tied to plan goals.	Plan Content
Progress against goals, targets is regularly monitored and reported.	Process
Elected/career officials and agencies support a shared future transportation vision.	Culture
Policymakers understand the benefits of transportation investment.	Leadership

Table 6. Linkage factors in evidence among half or more of responding MPOs and RPAs.

Factor	Category
All Six MPO/RPA Responses Show Factor "Always or Frequently in Evidence"	
Agency staff maintains a high level of knowledge and skill in planning and programming.	Leadership
LRTP contains specific policy guidance for investment decisions.	Plan Content
Planning and programming steps and procedures are well defined.	Process
Planning and programming functions are closely linked in the organizational structure.	Organizational Structure
Clear, open communications exist between units responsible for planning and programming.	Communications
Senior professional leadership provides sustained support for the vision and LRTP.	Leadership
Political leaders are engaged throughout the process.	Leadership
At Least Four of Six MPO/RPA Responses Show Factor "Always or Frequently in Evidence"	
A clear link exists between broad policy themes, LRTP goals, and priorities.	Plan Content
There are clear procedures for setting priorities among major investment types.	Data and Analytics
Target levels for preservation can vary among system elements.	Data and Analytics
Programming is based on a full understanding of a policy framework, role of data, and technical analyses.	Process
Regular dialogue and feedback occur between the agency and stakeholders.	Communications
The LRTP contains a short-range element to guide programming and respond to changing circumstances.	Plan Content
Performance measures are based on goal-oriented outcomes.	Plan Content
LRTP contains performance measures tied to plan goals.	Plan Content
Needs are assessed ahead of fund allocations.	Data and Analytics
Planning and programming are flexible to meet local needs.	Process
Programming is done by the planning unit.	Organizational Structure
Elected/career officials and agencies support a shared future transportation vision.	Culture
Coordination is strong between transportation plans and plans of other agencies, stakeholders.	External Influence
Some level of politically based decision-making is recognized as appropriate.	External Influence

Table 7. Linkage factors *not* in evidence in half or more state DOTs responding.

Factor	Category	Number of Times Cited as "Rarely" or "Never" in Evidence
Staff and policymakers focus more on outcomes than on individual projects in programming.	Culture	17
Actions of outside agencies reinforce transportation plans, programs.	External Influences	14
Political leaders know and follow the planning-programming process.	Leadership	13
A clear link exists between broad policy themes, LRTP goals, and priorities.	Plan Content	12
Fund allocation factors based on performance measures reflecting LRTP goals.	Plan Content	12
The LRTP contains a short-range element to guide programming and respond to changing circumstances.	Plan Content	11
Implementing agencies support shared vision, goals.	Culture	11
Policy-makers understand the benefits of transportation investment.	Leadership	11
Performance measures are based on goal-oriented outcomes.	Plan Content	10
Technical/analytical justifications are strong.	Data and Analytics	10

Table 8. Linkage factors *not* in evidence in half or more MPOs/RPAs responding.

Factor	Category	Number of Times Cited as "Rarely" or "Never" in Evidence
Technical/analytical justifications are strong.	Data and Analytics	4
Political leaders know and follow the planning-programming process.	Leadership	4
The LRTP contains a short-range element to guide programming and respond to changing circumstances.	Plan Content	3
Performance measures are based on goals-oriented outcomes.	Plan Content	3
LRTP contains performance measures tied to plan goals to define needs, measure progress.	Plan Content	3
Fund allocation factors based on performance measures reflecting LRTP goals.	Plan Content	3
Needs are assessed ahead of fund allocation.	Data and Analytics	3
Planning and programming are flexible to meet local needs.	Process	3
Program financial constraints do not limit the LRTP scope.	Process	3
Implementing agencies support shared vision, goals.	Culture	3
Staff and policymakers focus more on outcomes than on individual projects in programming.	Culture	3
Actions of outside agencies reinforce transportation plans, programs.	External Influences	3
Policymakers understand the benefits of transportation investment.	Leadership	3

SECTION 4

Overview of Planning-Programming Linkage in Selected Agencies

The framework and observations that emerged from expert interviews and the survey results described in the previous section established a basis for a series of in-depth interviews with senior staff members of six state DOTs and several associated MPOs in Colorado, Kentucky, Minnesota, Missouri, Oregon, and Vermont.

The material presented in this section is intended to examine in greater detail how individual agencies are addressing the factors identified in the first phase of the project, i.e., how their philosophies, processes, and procedures deal with factors considered important for linking plans and programs.

Section 4.1 provides brief overviews of key elements of the planning and programming processes in each agency, based on the comments of interviewees and information contained in key planning and programming documents. Appendix D contains additional material on how these agencies' planning and programming processes are structured.

Section 4.2 focuses on how each agency addresses the linkage factors that are considered most important, based on the discussion from earlier sections.

Section 4.3 provides information from several states other than those that were interviewed, providing additional observations on factors important to the planning-programming linkage.

4.1 Overview of Selected State Planning and Programming Processes

4.1.1 Colorado Department of Transportation and Denver Regional Council of Governments

Planning and programming at the state level in Colorado is carried out under the direction of the 11-member Colorado Transportation Commission guided by significant statutory and regulatory provisions, including Commission adoption of performance targets and funding "control totals" for major funding categories. The Commission has nearly complete control over the state's transportation investment, with only three percent of traditional funding appropriated through the legislature. The Commission maintains a focus on policy-level oversight rather than project advocacy. Separate divisions within the Colorado DOT (CDOT) are responsible for technical planning and programming functions: the Transportation Development Division handles planning activities and the Office of Financial Management and Budget manages STIP development. Despite the separation of functions organizationally, there is a strong tradition of communication and collaboration in carrying out the two functions as well as sustained senior leadership and support for performance-based planning and programming from long-tenured senior managers and officials.

The Commission and headquarters staff lead overall policy development while technical planning and programming are largely decentralized among six CDOT administrative regions, working with 5 MPOs and 10 additional **Transportation Planning Regions** (TPRs) each with a Regional Planning Commission (RPC). A separate **Statewide Transportation Advisory Committee** (STAC) with broad membership has been created to help ensure consistency in regional planning and improve methods to coordinate regional plans at the state level.

The 2030 Statewide Transportation Plan, adopted in 2005, is a first-ever hybrid of policy- and corridor-based planning, focused largely on the highway network with parallel plans prepared for other modes. It contains formal Commission policies and investment strategies and is derived from 350 Corridor Vision Plans. The statewide plan is a composite of the Corridor Vision Plans. Aggressive efforts are being made to move toward a performance-based planning and programming process based on four broad investment categories: **safety; system quality; mobility;** and **program delivery.** A fifth category includes 28 Commission and statutorily authorized Strategic Projects originally authorized in 1996 by the Colorado Trans-

portation Commission and supported by a separate funding authorization. Each investment category has specific goals, program areas (types of investment), and performance measures. Funds flow through three broad program categories: **Statewide Programs** (maintenance, resurfacing, bridge, safety, intelligent transportation system [ITS], and operations); **Strategic Projects** (the 28 designated projects mentioned previously); and the **Regional Priorities Program** (projects assigned priority in the regions). Until the current year, funding shortfalls have resulted in little or no funding available for the Regional Priorities Program.

An initiative is under way to incorporate a new "action planning process" to guide provision of CDOT's core services, e.g., roadway management, roadside management, system operations, snow and ice removal, and project delivery. Core Service Action Plans are expected to have goals, objectives, performance measures, and target values as well.

Projects are prioritized on the regional level through a two-step process involving **screening factors** and **evaluation criteria** established by CDOT in collaboration with the RPCs and the STAC. Geographic information system (GIS)-based data sets are provided by CDOT headquarters to facilitate the prioritization process. The two-year STIP is developed from regional programs and also contains "pools" of funds for various types of improvements (enhancements, bridge, safety, ITS, operations) that allow rapid project selection and commitment of funds without necessitating a STIP amendment for each improvement.

In addition to the corridor planning process and the extensive performance measurement framework that is in place, plan and program linkage is further strengthened through electronic coding and linkage of STIP projects by improvement type that can be tracked back to investment categories, program areas, and plan goals.

Funding levels are set by the Commission for each of the three program areas starting from the prior year's levels. Performance-based needs analysis is used to determine Statewide Program project funding; funds for the 28 Strategic Projects is preauthorized; and funding for the Regional Priorities Program is allocated to regions through a formula (45 percent vehicle miles traveled [VMT], 40 percent lane miles, 15 percent truck miles). Performance measures, project location, and regional allocations are used to provide funding "control totals" to the regions, which have authority to vary from allocated amounts by up to 15 percent without formally amending their programs.

Denver Regional Council of Governments (DRCOG) serves as the Denver region's MPO along with its other public policy, program, and service responsibilities. It is governed by a 52-member board with transportation decisions guided by a 16-member Regional Transportation Committee and a 27-member Transportation Advisory Committee. DRCOG must interact with three CDOT regions in carrying out its responsibilities because of overlapping jurisdictional boundaries for CDOT regions and DRCOG. The 2030 Metro Vision Regional Transportation Plan is a combination of policies, project categories, and specific projects organized around regional **"strategic corridors."** The 2030 Metro Vision Plan features 12 "system elements" with multiple policies and strategies identified for each. Funds flow to expenditure categories: **preservation and maintenance; base transit service; management, operations, and air quality; capital improvement-capital expansion; debt service;** and **aviation**.

The DRCOG TIP is a combination of projects whose funds flow from three agencies' processes: DRCOG, CDOT, and the Denver Regional Transportation District (RTD). There is a running debate over whether the DRCOG region receives an appropriate share of funding through the state processes. Within the region, target funding percentages are set for project types from specific funding sources based on performance measures and needs analyses. DRCOG solicits project recommendations within the region and prioritizes them through an eligibility review, a scoring review, and a resulting ranking. There is a close relationship between 2030 Plan goals and the criteria used for capital projects in the TIP.

The Colorado experience, at both the state and regional levels, exhibits features that suggest a strong planning-programming linkage, although many adjustments are still being made following a shift to a corridor- and policy-based plan.

Factors that Appear to Support Strong Planning-Programming Linkage

Performance-Based Planning. Performance-based definitions of need, still being refined, provide a strong, but indirect and still incomplete link from plan to program.

Corridor-Based Planning. Defining a "system of statewide significance" through the corridor visioning process (1) allows a hierarchy of performance targets to be used, i.e., not all identical levels of performance are worthy of identical state-level treatment/investment, and (2) invites integration of multimodal investments and coordinated timing of investments on a scale larger than typical project scopes.

Delegation. Delegation of both plan and program development to the CDOT regional level under a uniform set of guidelines and procedures based on statewide guidance maintains a base for planning and programming that is rooted in on-the-ground reality and local perspectives.

Close Organizational Connection. Having planning and programming functions guided by planning staff at the

regional level ensures that planning and programming practices are not defined and carried out independently, despite the separation of planning and programming in headquarters organizational structure.

Communications. Constant attention to and structured communications and deliberations focused on regional participants reinforces the linkages that have been created and deepens the shared understanding of the process among program managers, clients, and policymakers.

Leadership. Leadership has proven important in Colorado. At both the state and regional level, there are progressive professionals with longstanding experience and well-established working relationships committed to building and maintaining a link between plans and programs built on a systemwide, technical basis.

Factors that May Threaten Strong Planning-Programming Linkage

Lack of Adequate Funds to Address Growth. Funding limitations have several negative effects. Little money has been available to apply toward CDOT's Regional Priorities Program, lessening the usefulness of the basic CDOT program structure and breaking the link between regional plans and priority investments. Also, interest in participating in the state LRTP process may be threatened because there is little perceived local payoff.

Potential for the Approach Being Developed to Become Overly Complex. The CDOT process is still evolving in significant ways without "settling down" to a steady state. Initiatives to shift emphasis to business processes, performance-based planning, and greater regional accountability in program and project financial management may complicate the planning and programming process.

Lack of Transparency in Project Selection and Funding. Elements of the overall CDOT approach are thought to lack transparency for MPOs and outside stakeholders.

Continuing Concerns about Equity. The Denver metro area may not be receiving as much of the limited funds available as might be justified by various factors and conditions, according to DRCOG.

4.1.2 Kentucky Transportation Cabinet

The Kentucky Department of Highways is one of five department-level units within the Kentucky Transportation Cabinet (KYTC), the term used to refer to what in other states is the department of transportation. It has responsibility for highways and intermodal programs. Responsibilities for planning and program are highway-oriented and have been rejoined recently in units within the Office of Program Planning and Management. Kentucky does not have a separate state transportation commission; the KYTC deals directly with the Governor's office and state legislature in advancing its programs, a process which is linked directly to the state's budget process.

Planning is decentralized in 12 highway district offices that work with 15 **Area Development Districts** (ADDs) and their Transportation Committees, 5 MPOs, and 15 human service transportation districts. Each ADD maintains its own LRTP. Programming responsibility, along with policy development, remains largely centralized in headquarters. The KYTC program accounting and fiscal management process was shifted from an obligation basis to a cash basis in 2001, partly as a result of chronic over-programming in the past. An internal **Authorization Review Team (ART)** now regularly reviews revenue, cash flow, project commitments, and project implementation to ensure that projects can proceed as programmed and that adequate fund balances are maintained. In a sense, the importance of the planning-programming link has given way to the critical link that has been established between programming and budgeting.

The newly adopted Kentucky Statewide Transportation Plan (2006) is, for the first time, largely a policy plan. This shift, as well as the shift to cash-based fiscal management, is part of an ongoing effort to transition the planning-programming process from one characterized in the past by strong political influences and project advocacy, to one that is more data-driven, performance-based, and analytical in scope. Detail processes to support this effort are in early development. Interestingly, a corridor-based planning approach was dropped in 1996 because of data issues and funding shortfalls.

The Six-Year Highway Plan, 2007 to 2012, is the key document and is updated every two years along with the biennial state budget. Years one through three constitute the STIP; years one through two constitute the budget, i.e., the Six-Year Highway Plan and budget are directly linked. The Six-Year Highway Plan is structured around several expenditure categories: **Fixed-Cost** budget items (maintenance, resurfacing, administration, debt service, and revenue sharing managed on a budgeted basis); **State Program** (state-funded projects managed on a cash basis and funded through the State Road Fund); and **Federal Projects** (managed on a cash basis with federal funds and matched largely with toll credits). Consideration is being given to extending the 6-year plan to 10 years. An **Unscheduled Project Needs** list and database is maintained and becomes the source of new projects added to the Six-Year Highway Plan and STIP as cash becomes available. Priorities in the Six-Year Highway Plan are reviewed on a two-year cycle.

Development and application of performance measures consistent with plan policies is in its infancy, although a performance-based evaluation and prioritization process is being experimented with, driven by LRTP goals and measures: **safety and security, system preservation,** and **economic opportunity and mobility**. The link of plan to program, therefore, remains somewhat indistinct and a sense remains that too much of the program does not yet come through the MPO and ADD process.

The linkage between plans and programs in Kentucky is going through a transition:

- The linkage was direct when both plans and programs were project-based, but the connection between projects/investments and goals/objectives was weak;
- The recent switch to a policy-based LRTP has allowed better definition of goals and objectives but the related performance measures and data are not yet fully defined or applied in assessing the relative value/priority of projects/investments/funding allocations; and
- There is a commitment to move in the direction of performance-based planning and programming but funding shortfalls and major project commitments reduce the integrity/usefulness of data-driven planning and programming; cash flow management and geographic equity concerns remain dominant influences in programming investments.

Factors that Appear to Support Strong Planning-Programming Linkage

Introduction of a Policy-Based LRTP. The switch to a policy-based LRTP allows for better expression of goals and objectives in selecting projects and setting investment levels.

Performance-Based Planning. Performance-based definitions of need and project impacts are being given more attention, although they are not fully developed or applied.

Intermediate Plan Document. The use of the Six-Year Highway Plan as a bridge between long-range planning and programming continues to be useful in linking proposed investments to plan goals and objectives. The idea of extending it to cover a 10-year period may make it more useful in capturing the full scope of required project investments in a more practical timeframe.

Backbone System Designation. A 5,000-mile subsystem of state interstates, parkways, and U.S. routes has been identified and serves as a focus for assessments of need and investment priorities of greatest importance to the state.

Delegation. Delegation of both planning and prioritization to the MPOs, ADDs, and district offices under an evolving but still informal set of performance-based planning guidelines and procedures maintains a base for planning and programming that is rooted in on-the-ground reality.

Close Organizational Connection. Having planning and programming functions separately defined but housed in the same KYTC business unit helps ensure that planning and programming practices are not defined and carried out independently, but in mutual support.

Communications. Communications across KYTC functions/units, between KYTC headquarters and districts, and between KYTC and the ADDs and MPOs appear sound and help reinforce steps to improve planning-programming linkage even though the mechanics of performance measurement and performance-based programming are not fully developed.

Leadership. Until recently, senior staff leadership had been in place for some time, supporting the shift to policy- and performance-based planning and programming. Senior political leadership has varied in its approach to investment decision-making processes and rationales.

Factors that May Threaten Strong Planning-Programming Linkage

Funding Shortfalls and Major Project Commitments. Without additional funding, the planning process is less relevant in making project and investment decisions given the commitments that already exist within the Six-Year Highway Plan. With the addition of Congressional earmarks, the integrity of the long-range planning process is weakened further, allowing political, equity and effectiveness, and cash flow concerns to play a dominant role in programming decisions.

Inability to "See" or Document the Direct Plan-Program Link. The clarity of the link between plans based exclusively on policy and programs constructed from individual projects is not yet clear, i.e., the yet-undeveloped performance-based planning framework has not been (and may not be) specified completely because data may be missing, cause-and-effect relationships may not be fully understood yet, etc.

Disconnects between Planning and Fund Allocation. Currently plan-based goals, objectives, and performance-based measures are used directly to establish priorities and allocate funds in only limited instances, e.g., analyses used to move projects from the Unscheduled Projects Needs list into the Six-Year Highway Plan/STIP/budget and use of Highway Performance Monitoring System (HPMS) and related condition data to support maintenance and resurfacing commitments.

There are still instances, however, where project requests enter the program without going through the ADD/MPO/district office planning process.

Corridor-Based Planning. Corridor-level planning is no longer a prominent feature of the KYTC process although some attention is given to how projects and activities can be best integrated in scheduling and budgeting. With limited funds and rising preservation and maintenance needs, the timeframe for corridor-scale improvements is felt to be too long to warrant attention in planning.

Independent Modal Planning and Programming. "Stove-piped" funding sources as well as organizational separation of modal programs perpetuate separation in modal planning and programming and limit the ability to evaluate tradeoffs across modes or in packaging multimodal investments. Plans may espouse and follow a multimodal philosophy as a matter of policy, but goal achievement from multimodal programming may be frustrated, weakening the link. Because the KYTC invests very little state money in transit, the analysis of transit options and tradeoffs is not prominent in the state's planning and programming and does not appear to be prominent at the MPO level either; i.e., modal decisions are made largely independently.

Leadership and Staff Capacity. It is expected that KYTC will experience a significant loss of institutional memory and capacity over the next few years as senior managers reach retirement age. The impact will be multiplied because current staff is at roughly 75 percent of the level it was only a few years ago. The linkage between planning and programming through more cutting-edge and sophisticated data gathering and analysis may be positively or negatively affected depending on how the lost staff capacity is replaced and whether continued enhancements in information technologies can support new, more sophisticated procedures and processes despite staff and funding shortages.

The staff shortage has an immediate and continuing impact in the diversion of staff away from true technical planning and analysis, requiring more time to be spent in meetings and on process issues. Funding for more staff is available but legislative caps on positions and hiring prevent staff expansion.

Absence of a State Transportation Commission. Without an intervening group with authority to direct the processes and activities of the KYTC, direction will continue to come from elected state officials, potentially reinforcing the political/parochial basis for planning and programming decisions as has been the pattern in the past, possibly retarding the emergence of performance-based, data-driven investment decision making.

Management of Cost Overruns. While cost overruns (and "optimistic" cost estimates in planning) may not be a larger problem in Kentucky than in other states, cash management of the process means that overruns have an immediate and disproportionately disruptive effect on setting priorities and implementing the program.

Rising Maintenance and Preservation Needs. As these needs increase without significant funding increases, the planning process directed at choosing among alternative major project opportunities to relieve congestion and address other goals becomes less and less relevant in day-to-day investment decision making.

4.1.3 Minnesota Department of Transportation and Metropolitan Council

Planning and programming in the Minnesota DOT (Mn/DOT) are conducted out of the same business unit, the Office of Investment Management (OIM) within the Program Management Division, one of five major Mn/DOT operating units. The Program Management Division also houses the aeronautics and transit, freight, and commercial vehicle offices as well, reinforcing the multimodal dimension of planning and programming. Although Minnesota has no state transportation commission, per se, the Lieutenant Governor, for the first time, currently is serving as the Mn/DOT Commissioner, reinforcing the influence of the state executive branch on transportation policy.

The Planning and Analysis branch of OIM directs planning activity and frames the prioritization and investment decision processes used by the state's eight district offices in a highly decentralized approach, supported by formal guidance developed collaboratively. Planning and programming activity and processes are focused on the state's highway network, which includes a designated **Interregional Corridor System** (IRC) as a subsystem of the state's Trunk Highway network. District offices develop District Long-Range Plans as well as district programs (e.g., Area TIPs [ATIPs]) following jointly developed guidance and supported by regular formal and informal communications. Plan and program development are carried out with the collaboration of **Area Transportation Partnerships (ATPs)** in each district that formally propose, review, and prioritize activities and adopt final district recommendations.

Mn/DOT has developed a sophisticated performance-based planning and programming approach that is based on three strategic directions: **safeguard what exists; make the network operate better;** and **make Mn/DOT work better.** Ten policies are in place to guide action on these strategic imperatives. Performance measures and targets are established

for system preservation, operations improvements, and capacity expansion over three time horizons—6, 10, and 20 years—with explicit measures and targets for the IRC.

The Minnesota Statewide Transportation Plan (2003) currently is being updated through district and ATP plan development activities that are focused on system performance rather than isolated project proposals. Mn/DOT, through the activities of the district offices, also develops a **10-Year Highway Work Plan** that includes full costs for highway projects and separates years one through three to serve as the STIP from the seven years beyond. Costs are updated annually in conjunction with STIP development. Separate plans also are developed and updated intermittently for highway systems operations, public transportation, and freight.

The Mn/DOT STIP is a composite of District ATIPs with investments organized into one of five modal assistance programs: **Highway Assistance Program, Transit Assistance Program, Rail Service Assistance Program, Port Development Assistance Program,** and **Airport Development Assistance Program.**

Although planning, project selection, and programming are performance-based, fund allocation is not. Planning-level funding allocations are made to the districts by a negotiated formula covering each of three planning stages within a 25-year period. Mn/DOT state revenues are allocated to local road and bridge programs (5 percent) and "regular distribution" (95 percent); federal funds are allocated to ATPs (Mn/DOT districts) based on system size, system usage, and performance factors, within broad categories set by policy: 60 percent for preservation; 10 percent for safety; and 30 percent for mobility improvements. District offices have some latitude in varying the use of funds. A portion is also set aside for a "central fund" to address IRC needs and special bridge needs.

The **Metropolitan (Met) Council** is a broad-based regional planning organization also serving as the region's MPO for transportation purposes. The Met Council directly oversees operating units that include the region's metro transit system, contract commuter bus service and ADA paratransit services. A 33-member Transportation Advisory Board (TAB) oversees the planning and programming process, receives advice from a 27-member Technical Advisory Committee, and recommends final action on plans and programs to the full 16-member Metropolitan Council. In addition, the Mn/DOT Metro District Office hosts a Capital Investment Committee that integrates Met Council and Mn/DOT interests in the Twin Cities region.

Planning in the region is based on the Met Council's **Regional Development Framework,** a multifunctional policy plan. Within the framework are **Regional Transportation Benchmarks** that are used in formulation of the region's **Transportation Policy Plan,** which is organized by mode (**Metro Highway System Plan**, **Transit System Plan**, and **Aeronautics System Plan**). Eighteen policies and more than eighty strategies are contained in the Transportation Policy Plan, including a statement of priorities beginning with system preservation, then system management, and finally system expansion.

The region's TIP project categories reflect these priorities as well as mode and funding source distinctions. The Met Council selects projects for funding from state and federal sources it controls; Mn/DOT programs projects from funds the Met Council does not control. The Met Council staff estimates that three-quarters of the criteria used in Met Council programming are taken from the Transportation Policy Plan.

In the statewide and regional examples from Minnesota, there appear to be strong linkages between plans and programs. The proof is indirect, however, because the emergence of projects from plans cannot be seen directly when plans contains policy while programs list discrete projects.

Factors that Appear to Support Strong Planning-Programming Linkage

Performance-Based Planning. Performance-based definitions of need provide a strong, but indirect, link from plan to program in both Mn/DOT and the Met Council:

- Less than desirable performance against plan policies, measures and targets provides the focus for potential investments;
- These investments can be evaluated as to priority (impact, cost-effectiveness, etc.); and
- Priorities constitute a program subject to alternative financial assumptions/constraints.

Technical Processes. Data and analytical techniques are being continually enhanced to ensure a strong linkage, i.e., the translation of policy to performance measures to projects to priorities.

Intermediate Plan Product. A project-based intermediate product, the **Mn/DOT 10-Year Highway Work Plan,** helps to ensure a strong linkage by holding projects that fall outside the three-year STIP/TIP window open for action and continuing evaluation.

Corridor-Based Planning. Defining a system of statewide significance (the Mn/DOT IRC) (1) allows a variable hierarchy of performance targets to be used, i.e., not all identical levels of performance are worthy of identical state-level treatment/investment, and (2) invites integration of multimodal investments and coordinated timing of investments on a scale larger than typical project scopes.

Delegation. Delegation of both plan and program development to the Mn/DOT district level under a uniform set of performance-based planning guidelines and procedures maintains a base for planning and programming that is rooted in on-the-ground reality.

Close Organizational Connection. Having planning and programming functions housed in the same Mn/DOT business unit ensures that planning and programming practices are not defined and carried out independently, but with mutual support as part of a continuous process.

Communications. Constant attention to communications across functions, between Mn/DOT headquarters and districts, and between Mn/DOT and the broadly representative ATPs reinforces the linkages that have been created and promotes the shared understanding of the process among program managers, stakeholders, and policymakers.

Leadership. Leadership has proven critical in Minnesota. Until recently, at both the state and regional levels, there have been progressive professionals with longstanding experience and well-established working relationships committed to building and maintaining a link between plans and programs that has emerged on a systemwide, technical basis. Following passage of ISTEA, Mn/DOT was one of the first states to establish regional planning councils in areas not represented by MPOs.

Factors that May Threaten Strong Planning-Programming Linkage

Inability to "See" or Document the Direct Plan-Program Link. The link between plans based exclusively on policy and programs constructed from individual projects is not fully transparent, i.e., the performance-based planning framework has not been (and may not be) specified completely because data may be missing and cause-and-effect relationships may not be fully understood.

Disconnects between Planning and Fund Allocation. Statewide and metro programs of projects flow directly from needs defined by performance measures and targets. If funding allocation is not also tied directly to performance-based needs, however, the link between plans and what gets funded may be weakened somewhat. Pure system "performance" is not the only factor to be considered in what gets funded, e.g., equity and non-transportation goals and objectives (land use, economic development, social service) are part of the ultimate calculation.

Also, if funds are allocated based on factors other than performance-based needs, e.g., system size and/or use, there are no guarantees that the funds allocated will be committed to the projects that are most effective in addressing the shortfalls in performance.

Independent Modal Planning and Programming. "Stovepiped" funding sources as well as organizational separation of modal programs perpetuate separation in modal planning and programming and limit the opportunity to evaluate tradeoffs across modes or in packaging multimodal investments. Plans may espouse and follow a multimodal philosophy as a matter of policy but goal achievement from multimodal programming may be frustrated, weakening the link.

4.1.4 Missouri Department of Transportation

Planning and programming in Missouri is done under the guidance of the six-member Missouri Highway and Transportation Commission. Responsibility for both planning and programming reside in the Transportation Planning Office which reports to the Director of Program Delivery within the Missouri DOT (MoDOT) organizational structure. Ten district offices support the planning and programming activities and work directly with eight MPOs across the state.

The existing LRTP contains goals and investment targets, although they are not linked to specific performance measures. Missouri's **Framework for Transportation Planning and Decision-Making (2004)**, Planning Framework, provides guidelines for program levels and project selection consistent with long-term goals and serves as the current link between plan goals, performance measures, and the STIP.

The current 2001 LRTP is being updated in 2006. It sets eight goals that are typical of most current plans, focusing on **safety and security, preservation of existing infrastructure, congestion relief, improved access to opportunity, efficient movement of people and goods, economic competitiveness, environmental protection, and enhanced community quality.** The LRTP also contains funding and performance targets for modes as well as differential targets for highway and bridge rehabilitation and preservation on the National Highway System (NHS), other arterials, and collectors.

The current plan update effort, **Missouri Advance Plan (MAP),** involves regional working groups. It will be a policy and goal-setting document without specific project listings, but will continue specific implementation goals for investment and system performance.

The Planning Framework illustrates an aggressive effort to link long-range plans with short-term investment decisions through a rigorous prioritization and programming process and mechanics. Physical and functional needs on the highway systems are prioritized largely through the application of management systems. Responses are evaluated and prioritized in five major goals areas/improvement categories: **Safety, Taking Care of the System, Major Projects: System Expansion, Regional and Emerging Needs,** and **Interstate System.** The first two categories are directed at the district

level. Headquarters manages the process for Major Projects: System Expansion and Interstate System. District and headquarters collaborate on Regional and Emerging Needs.

The initial allocation of funding to project categories is done by the Commission based on the LRTP and management systems. Once funding has been allocated to categories, RPCs and MPOs are consulted on project recommendations and ranking factors. The Planning Framework describes nearly 40 specific scoring criteria to be used that tie back to the five goal areas/improvement categories. Each district is allowed some flexibility by adding points to the evaluation and ranking process based on district factors.

For Regional and Emerging Needs Projects, local weighting is more important to project selection. In the 2006 TIP cycle, MoDOT used an innovative approach, bringing all RPCs together in a single meeting where they made the case for their top priority projects. All projects were voted on by all present, creating a balance in priorities, statewide, and also exposing varying district needs to each other.

Allocation of funds is somewhat more traditional but still directly reflective of the goal and performance framework. With Commission approval, amounts are set aside for special purposes from the total of funds available, e.g., suballocated funds, other modes, special economic development, and cost-sharing projects and debt service. Remaining funding amounts are set for **Taking Care of the System** (split between the Interstate and allocations to the districts based on system size, use, and safety measures); a "pool" of **flexible funds** allocated to the districts (based on population, employment, and VMT); and **Major Projects and Emerging Needs** using the same formula factors.

Factors that Appear to Support Strong Planning-Programming Linkage

Performance-Based Framework. Missouri's Planning Framework creates the potential for a strong link between the LRTP and the STIP by providing a method of relating goals of the LRTP to specific project selection decisions. When the MAP is complete, Missouri will have a new transportation planning and programming cycle that will provide a strong link between long-range goals, funding allocations, and selection of projects.

Outcome-Based Policy Framework. A clear link exists between broad policy themes and project selection criteria, as described by the Planning Framework, which includes measurable criteria for funding allocation. The Framework is expected to be reinforced by the new long-range plan. Program-level funding allocations are based on the policy framework and project selection criteria guide project selection within these funding categories. Extensive involvement of regional stakeholder groups in project selection means that some categories must be more flexible at the project level. At the program level, there are clear criteria for investment levels.

Leadership. Current leadership is providing strong consistent support for a long-range vision, although this may not have been the case in the past. The previous perceived arrogance of MoDOT has been replaced by cooperative leadership that involves the public and regional stakeholders. This involvement enhances commitment to whatever plans and programs emerge.

Technical versus Political Forces and Rationales. Missouri STIP has become a fairly stable document, so the worry that good efforts will come to naught because of changes is minimized. There are two key reasons for this stability: relative lack of politically motivated last-minute changes to the document and one of the most accurate project cost-estimating processes in the country.

Factors that May Threaten Strong Planning-Programming Linkage

Communications. Some people, both inside and outside MoDOT, were unaware of the 2001 plan, indicating significant gaps in communications and little likelihood of a connection between plan goals and subsequent programs.

Lack of Funding. Lack of funding was described as a major impediment to the link between planning and programming. The feeling by many is that, when one is struggling just to hold the system together, all the priorities are predetermined by the need for system preservation or previous commitments.

Project Delivery Emphasis. MoDOT appears to be more concerned with project delivery than policy implementation in how the programming process is directed. Although policymakers are focusing increasingly on outcomes, there is a smaller backlog of specific projects that must be completed and there is a strong focus on these at the regional and local level. This situation is likely the result of the dominant role of previous project commitments and is changing with SAFETEA-LU and new state funding initiatives.

Lack of Corridor Perspective. During interviews some concern was expressed that there is not a link between long- and short-range goals with respect to specific corridors. While project selection criteria are generally clear in regard to long-term goals, it is less discernable with regard to the short-term future of specific corridors.

Project Focus of Elected Officials. Elected and local officials seem to be more focused on specific projects than

does MoDOT. Within MoDOT, the planning and programming staff in headquarters seems to have a broader vision than district staff. The vision within the Kansas City and St. Louis Transportation Management Areas (TMAs) seems to be broader in the sense of being more multimodal than does the vision of the MoDOT staff. Bringing these visions together is a goal of MAP, the new long-range planning process.

Coordination with Other Agencies. Between local agencies and MoDOT there is a great deal of coordination. There does not seem to be the same level of coordination with other state agencies. The planning process is designed to get buy-in from local and regional transportation agencies, which should then support the plans and programs. The relation with other agencies is much less clear.

Broadening Understanding. It appears that the current plan update and Planning Framework for project selection have strong support. However, it is not clear how well understood the process and approach is beyond those who actively participate in it. It appears that there is growing confidence in MoDOT, which will prevent interventions that run counter to the long-range goals and objectives of the long-range plan and programming process. The legislature appears to understand and endorse the major themes of the new planning process and can see the connection to program allocations. At a project level, it is less clear.

4.1.5 Oregon Department of Transportation

Planning and programming in Oregon is carried out under the guidance of the five-member **Oregon Transportation Commission (OTC)**, which is knowledgeable about and supportive of the processes that are in place. Attention to process by the OTC is thought to enhance the plan-program link. Formal responsibilities for planning and programming are separated: Development of the LRTP and the **Oregon Highway Plan** is the responsibility of the Transportation Development Administrator (TDA), who reports directly to the Oregon DOT (ODOT) Director; preparation of the STIP is the responsibility of the Highway Finance Office, reporting to the Highway Division Deputy Director.

The LRTP is developed largely in the five Regional Offices and integrated at the state level, with involvement of the OTC. To support and guide regional planning, ODOT regions interact regularly with the state's six MPOs and **Area Commissions on Transportation (ACTs)** that were created in 1997 to serve as advisory bodies to the Commission. The ACTs focus primarily on capacity expansion needs and projects in their areas.

The Oregon Transportation Plan (OTP), adopted in 2006, provides a policy umbrella and is not project specific. The plan is framed by seven goals: **mobility and accessibility; management of the system; economic vitality; sustainability; safety and security; funding the system;** and **coordination, communications and cooperation.** An extensive framework of 23 policy statements and over 100 strategies are incorporated. Individual modal plans are prepared as part of the overall process, including the Oregon Highway Plan, which contains local plans and detailed needs assessments for roadway facilities. Other modal plans are prepared for bicycle and pedestrian improvements, public transportation, safety actions, rail, aviation, and ITS.

An **Implementation Framework** of policies, strategies, and key initiatives is developed to guide actions by ODOT and partner agencies. A concept of "feasible needs" is used to assess projected funding gaps against current funding levels.

A **"State Agency Coordination Program"** requires preparation and review of specific "facility plans" as part of the implementation process, providing a step where implementation of OTP goals can be considered on a project, subsystem, or area level.

The ODOT four-year STIP is viewed primarily as a budget document and is updated on a two-year cycle, based on information and recommendations developed in the regional offices. STIP development in the regions is guided by **project eligibility criteria and prioritization factors** that are reviewed each STIP cycle and adopted by the OTC for application on **modernization, pavement preservation,** and **bridge projects.** A **STIP Stakeholder Committee** with broad membership also reviews and approves the criteria and factors. The **ODOT STIP User's Guide** states, "Almost all of the projects listed in the STIP come from long-range transportation plans, or from state management systems and asset management data bases, or from program application" (*16*).

The STIP is organized around **16 major programs** that generally reflect programmatic sources of funding:

- Bicycle and pedestrian,
- Highway bridge,
- Congestion management and air quality,
- Fish passage and large culverts,
- Forest highways,
- Immediate opportunity fund,
- Indian reservation roads,
- Modernization,
- Operations,
- Pavement preservation,
- Public transit,
- Railway-highway crossings,
- Safety,
- Scenic byways,
- Transportation enhancement, and
- Transportation growth management.

Pavement preservation, bridge replacement and rehabilitation, modernization, safety, and operations account for 90 percent of the Oregon's investment through the STIP.

Funding levels and regional funding distributions are established by the OTC in advance of STIP development to guide local project evaluation and selection. With the exception of the operations budget, which is primarily maintenance, all categories of expenditure are driven either by ODOT management systems or by the ACTs.

Factors that Appear to Support Strong Planning-Programming Linkage

Commission Perspective. ODOT has an energetic and farsighted long-range planning process that is reasonably well integrated into the remainder of the organization and is strongly supported by the OTC. There is very little political involvement in determining plans or STIP content. The OTC by law adopts the plans and programs. The overall environment will allow an ongoing focus on process improvement.

Organization Structure. The OTP and the selection criteria are both the responsibility of the Transportation Development Division.

Policy Framework. Program-level funding allocations are based on a strong policy framework, and project selection criteria, management systems, and operations needs guide project selection within these funding categories.

Shared Visions. There appears to be shared vision among DOT and MPO representatives. Each has varied goals based to some extent on the geographic area of their responsibility.

Outcome Focus. Policymakers are focusing on the big picture, including policy outcomes. As one moves to the regional and local levels, there is greater emphasis placed on regional- and local-level projects and issues.

Communication and Coordination. Between local agencies and ODOT there is a great deal of coordination. The ACTs have strengthened the connection with stakeholders.

Leadership. Current leadership at the OTC and within the Transportation Development Division is providing strong consistent support for a consistent long-range vision.

Delegation and Involvement. The relatively recent involvement of local politicians and decision-makers through the ACTs has strengthened ties to communities. The involvement is correctly focused on capacity and non-management system–determined areas, i.e., involvement excludes pavement, bridge, and safety.

Factors that May Threaten Strong Planning-Programming Linkage

Lack of an Intermediate Plan Document. The project selection criteria are developed by the Transportation Development Division of ODOT and help establish a link between the long-range plan and the STIP. But without intermediate-range plans or regional plans there are few direct links between the plans and the programs and projects that emerge from the STIP process.

Relationship between Goals and Performance Measures Is Poorly Defined. The existing LRTP contains goals, actions, and investment targets although they are not linked to specific performance measures. Some ODOT staff feel that the programming decisions made in the regions do not reflect the OTP as well as they could.

Elected Officials Project Focus. Elected and local officials seem to be more focused on specific projects than is ODOT. They often enter the process with specific project needs already defined. The challenge is to help them step back and look broadly at all the needs so that their community's needs can be seen in the broader context. The ODOT long-range planning and programming processes are open and energetic enough that political leaders should understand the benefits. To what extent this is actually true is not known.

Land Use Linkage Issues. Oregon is serious about land use planning. The process, however, does not appear to use programming to implement plans, but rather to address problems. (Portland Metro was lauded for using its comprehensive land use and transportation plan to guide programming rather than to simply address congestion or surface condition problems.) Additional guidance is needed to move project selection toward projects that evolve from or support the Statewide Plan. All projects currently are judged by whether they generally "support the plan," or are not inconsistent with the plan, rather than whether they best support the plan. Outside of Portland, the connections between local land use plans and transportation choices and design have yet to be fully made. A bit more emphasis on this area could significantly strengthen the link and impact planning, programming, and facility design. The structure of the planning and programming process in Oregon requires a substantial level of coordination between ODOT and local land use and stakeholder groups. These connections and their influence on prioritizing and programming transportation investments remain uneven across the state.

Delegation Tensions. The development of the STIP at the regional level creates a tension between overall organization goals and needs as understood by regional staff and their local stakeholders and public.

Lack of Funding. Lack of funding was described as a major impediment to a stronger link between planning and programming. The feeling by many is that, when one is struggling just to not let the system fall backward, priorities are predetermined by the need for system preservation or previous commitments. "The closer you are to starvation, the less logical things get."

Allocations Across Policy Areas. It also was not clear how the funding allocations are made, e.g., how much goes to preservation versus capacity expansion.

Allocation Formulas Disconnected from Needs. Regional allocation based on a predetermined formula can be unresponsive to changing conditions. Although a data-based formula avoids ongoing wrangling over which part of a state gets which part of the capital budget, ideally funding should be allocated to solve problems or address goals. Fixed formulas are not responsive to changes and rapidly developing needs.

4.1.6 Vermont Agency of Transportation

Planning and programming functions are somewhat separated in Vermont Agency of Transportation (VTrans), with LRTP responsibility located within the Policy and Planning Division and STIP development carried out jointly by the Policy and Planning Division and the Finance and Administration Division. With VTrans funding support, Vermont's RPCs and the Burlington MPO carry out much of the planning activity, including input to project selection. VTrans' 10 district offices are primarily involved in maintenance activities. Vermont's current LRTP is a policy document emphasizing three goals: **managing the state's existing transportation system; improving all modes; and strengthening the economy, protecting the environment and improving quality of life.** The LRTP does not contain short-range elements, per se, but individual modal plans provide additional guidance on investment strategies and performance targets. The major modal plan document is the State's **Highway System Policy Plan (HSPP) (2004).**

The HSPP recognizes three sub-elements of the highway system: **the Interstate Network, the Non-Interstate Primary Network,** and **the Off-Primary Network,** implying variation in performance standards and investment policies. The HSPP also establishes performance categories and goals. The categories include **preservation, safety, mobility,** and **environment/quality of life.** Performance measures and targets are recommended for each category. A broader set of policies and strategies are intended to further frame future VTrans investment decisions.

Programming is highly centralized and the STIP is largely a product of the legislature's consideration of regional plans through the five-year budget/capital program development process with VTrans providing initial analysis and recommendations, i.e., legislative review and adoption of the proposed project list constitutes the content of the STIP. As a result, the act of compiling the STIP is more of a technical task rather than one focused on project evaluation or selection.

The basic allocation of funds to various STIP programs is determined by VTrans based on a variety of factors that generally reflect the goals of the LRTP.

Factors that Appear to Support Strong Planning-Programming Linkage

Delegation. Since VTrans appears to be moving in the direction of increased input from RPCs, the regional plans also will likely have more influence on project selection in the revised planning and programming cycle.

Leadership. Current leadership is rethinking and changing the LRTP process to be more business oriented and to emphasize asset management. Staff throughout the agency appears to understand and support this approach.

Opportunity for Performance-Based Planning. The new LRTP process, with its emphasis on business approach and asset management, provides a significant opportunity to bring measurable goals and performance criteria into the process. In addition, the unique nature of Vermont political and planning structure may provide additional opportunities.

Communication and Collaboration. There appear to be generally good relations between VTrans and the RPCs and the MPO. Given Vermont's town meeting approach to governance and decision making, this link to the local community may provide a way for VTrans to generate support for a longer-term vision and the tools to link it to ongoing project and program decisions.

Factors that May Threaten Strong Planning-Programming Linkage

Currently, the long-range planning and programming processes in Vermont are not directly linked, although there is opportunity for change in this regard as the new planning process is embraced.

Historically Weak Linkage. The current long-range transportation plan, prepared in 2002, does not appear to influence the budget/STIP process directly. While the plan contains general process and program recommendations, it does not contain program and project criteria or investment goals that can be directly related to project selection.

A new long-range plan currently under development is expected to be a business-oriented plan, with emphasis on asset management. It will have more direct influence on the five-year budget/program plan.

Lack of Funding. VTrans staff as well as the Burlington MPO report that the requirements of maintaining existing transportation infrastructure and keeping previous project commitments use most available financial resources with little in the way of resources available to commit to new projects or facility expansion.

Limited Involvement and Transparency. Because confirmation of project selection takes place as part of the legislative budget process, the initial program and budget determinations are confidential. While the RPCs provide input into project rankings there is no formal stakeholder or public involvement process prior to submittal of the program to the legislature.

Limited Use of Performance Measures. The LRTP does not contain performance measures. Given the business-oriented nature of the new LRTP, this gap may be filled with the new plan. There is no direct link between funding allocations and LRTP performance measures.

Program Priority-Setting Process. There are no clear procedures for setting priorities among major classes of investment. Each program area has criteria for setting priorities, but it is unclear how the planning process influences the investment decisions among programs.

Focus of Elected Officials. In Vermont, the focus has generally been at the project level. In part this has been the result of limited resources leading to a focus on the most efficient project delivery rather than longer-term goals that would be more meaningful in the project selection process. The Vermont legislature has an unusually large number of members, with 30 senators and 150 representatives. As a result, legislators are geographically focused on their district's individual projects, as are the individual town councils. The staffs of the RPCs and MPO interviewed have a wider vision that encompasses planned transportation needs.

Understanding of Planning's Role. Political leaders understand the budgeting and five-year program process. It is unclear what level of understanding of planning and programming exists beyond that.

Focus on Budget Development. The primary impediment to linking planning and programming in Vermont is the legislative budget process, which chooses project priorities outside of the planning process. If the LRTP is to influence project selection and program levels, it will be necessary for it to influence the five-year budget/program process. It is not yet clear if and how that will be accomplished. There are other factors that also impede the process:

- The existing LRTP is strictly a policy plan without clear links to funding allocation or project selection decisions either through shorter-term plans or modal plans;
- Inadequate resources and an emphasis on preservation of the existing system dampen enthusiasm for the process and cause some potential participants in the process to assume there are no decisions to be made; and
- The lack of a clear link between regional plans and the LRTP means that as RPCs provide input on project priorities, they may be doing so based on a view of the future that is inconsistent with that of VTrans.

4.2 Addressing the Key Linkage Factors

The survey results reported in Section 3 identified those factors among 39 that were considered **most important** for linking plans and programs as well as those factors **least in evidence**. The combination of these factors is presented in Table 9. The discussion that follows provides an indication of how each of these key factors is being addressed by the agencies that were interviewed.

4.2.1 Structure and Content of Plans and Programs

The structure and content of plans and programs encompasses a number of aspects important to the notion of planning-programming linkage:

- The content of the plan (policies versus projects);
- The nature, scope, and clarity of plan goals ("outcomes" versus "outputs");
- Whether and how measures of performance are being used to define needs and chart progress toward goals;
- The focus and definition of categories of investment;
- If and how measures of performance are used in setting investment and project priorities; and
- The extent to which measures of performance are used in allocating funds.

LRTPs as Policy Documents

There is a significant convergence and commonality today in the structure and content of plans and programs. All of the long-range planning processes in the agencies interviewed for the study are producing plan documents that are predominantly policy based rather than project oriented. Some, like

Table 9. Factors considered most important and least in evidence.

Category[a]	Factors[b] Most Important	Least in Evidence
Structure and Content of Plans and Programs[c]	• LRTP contains specific policy guidance for investment decisions.[d] • A clear link exists between broad policy themes, LRTP goals, and priorities.[e]	• A clear link exists between policy, LRTP goals, and priority setting. • Fund allocation factors are based on performance measures reflecting LRTP goals. • The LRTP contains a short-range element to guide programming. • Performance measures are based on goal-oriented outcomes.
Communications[c]	• Clear, open communications exist between units responsible for planning, programming.[d] • Regular dialogue and feedback occur between agency and stakeholders.[d]	
Leadership	• Senior professional leadership provides sustained support for the vision and the LRTP. • Agency staff maintains a high level of knowledge and skill in planning and programming. • Political leaders understand and follow the planning-programming process.	• Policymakers understand the benefits of transportation investment. • Political leaders know and follow the planning-programming process.
Organizational Structure	• Planning and programming functions are closely linked in the organizational structure.	
Organizational Culture		• Staff and policymakers focus more on outcomes than on individual projects in programming. • Implementing agencies support a shared vision, goals.
External Influences		• Actions of outside agencies reinforce transportation plans, programs.
Data and Analytics		• Technical and analytical justifications are strong.

[a] These *categories* were ranked **most important** (number one and/or number two) by at least half of the state DOT respondents.

[b] These *factors* were ranked **most important** within each of their respective broader categories by at least half of the state DOT respondents.

[c] *Categories* also ranked **most important** by half or more of the MPO/RPA respondents.

[d] *Factors* also ranked **most important** within the category by more than half the MPO/RPA respondents.

[e] *Factor* was ranked **most important** within the category by more than half the MPO/RPA respondents.

Colorado and Kentucky, are doing so for the first time. The major motivations for moving to policy-based plans are (1) to avoid prolonged and irresolvable debates or stalemates over what specific projects would be funded over a 20-year planning horizon given current funding constraints and future uncertainties and (2) to find a common, shared understanding and base of agreement among contending interests on what is to be achieved as a way to guide deliberations over short-term investment priorities.

The pattern is somewhat different in MPOs and RPAs where interest is necessarily more focused on the location and nature of specific improvements, and where longstanding

practice has been to define anticipated problems and solutions in the forms of specific projects. In most cases, the MPOs and RPAs interviewed had a mix of policy- and project-based long-range plans. The need to include projects at a regional level also is driven by the need to recognize projects that already have received firm funding commitments at the state or federal level, or that are consensus priorities in the region.

The Rise of Broad-Based, Outcome-Oriented Goals

Another of the most obvious and widespread trends in plan and program structure and content today has been the near ubiquitous inclusion of broad-based goal statements that reflect desired outcomes of planning and investment decisions, not simply the "outputs" of transportation construction, operations, and maintenance activities. Safety, access and mobility, economic vitality and opportunity, environmental quality, and asset protection all are routinely cited in LRTPs, including those of all of the agencies that were interviewed for this project. Table 10 summarizes the content of long-range plan goals and policies for these states.

Application of Performance Measures

Measuring the performance of highway and transit systems has grown into a major topic of interest for policymakers, managers, and academics in the last decade as travel demands increased, the consequences of travel growth became better defined, and funding gaps have grown. Virtually every transportation planning and operating agency is working on systems and approaches to better measure performance as a means of defining investment needs and to chart progress toward goals.

As a result, performance measurement is perhaps the single most important factor in understanding and strengthening the linkage between plans and programs of investment, i.e., measurements of performance provide the metric that associates a project investment with a goal and provides a yardstick for charting progress and success in pursuing goals.

Performance of the transportation network is typically defined in two parallel dimensions: (1) the condition of the asset and (2) how well the asset functions. Performance measurement systems dealing with asset condition have been easiest to develop and apply for a variety of reasons, leading to increasingly sophisticated, databased means of addressing the systems or asset "preservation" goals that all agencies have in common.

Performance in a functional sense has posed more difficulty, particularly as interest in performance of the system has broadened to include more than how well travel demand is accommodated between right-of-way lines. LRTPs now commonly contain direct references to economic, environmental, quality of life, and character of community concerns. At the same time, various transportation projects and investments have varied impacts and consequences in these and other important dimensions. But not all of these causal relationships are clear or measurable to the same degree, complicating the definition and application of measures of functional performance against long-range goals. Nonetheless, states, MPOs, and RPAs continue to work on performance-based planning and measures that can guide investment to address today's broader goals.

Among the agencies interviewed, there is a wide range of experience in the formulation of performance-based planning and programming schemes. A few of the agencies are pushing the state of the art; and a few are well behind the curve but striving to advance.

Table 10. Long-range plan goals structure and investment categories.

State	Goal or Policy Topic
Colorado	Safety, System Quality, Mobility, and Program Delivery
Kentucky	Safety and Security, System Preservation, and Economic Opportunity and Mobility
Minnesota	Safeguard What Exists, Make the Network Operate Better, and Make Mn/DOT Work Better
Missouri	Access to Opportunity, Congestion Relief, Economic Competitiveness, Efficient Movement of Freight, Quality of Communities, Environmental Protection, Safety, and Taking Care of the System
Oregon	Mobility and Accessibility; Management of the System; Economic Vitality; Sustainability; Safety and Security; Funding the Transportation System; and Coordination, Communications and Cooperation
Vermont	Preservation, Safety, Mobility, and Environment/Quality of Life

Source: Various web-based planning documents or material supplied by interviewees.

- **Minnesota** has been known for some time as a state that is pushing the envelope on performance-based planning and programming. Its approach is rooted in a framework that ties 10 policies to the three long-range plan goals noted in Table 11.

  From the framework in Table 11, Mn/DOT has developed and continues to fine-tune explicit measures of performance tied to each policy and goal. The Mn/DOT approach involves assessments of current condition as well as the establishment of targets for improvement over various timeframes and over various portions of the state highway network. In project scoping, prioritization, and programming, district offices must assess and document the progress toward targets that is expected from actions and investments proposed. Establishing this link requires several steps and considerable analytical effort but has the potential to make the plan-program linkage stronger and improve understanding of causal relationships as data improves over time.
- **Colorado** is moving in the same direction with perhaps less experience to date in the field. Table 12 illustrates the framework that has emerged in CDOT, including the link between goals, investment categories, program areas, and measures of performance.
- **Kentucky** and **Vermont** also have an interest in advancing into performance-based planning and programming, but their systems are not as well developed for a number of reasons mostly unique to their circumstances and traditional processes. As an example, both Kentucky's and Vermont's transportation programming has always been directly tied to state budget development, which is directed by the legislature without the benefit of a state transportation commission. The KYTC staff, however, is experimenting with the use of the following measures for project evaluation and prioritization that directly reflect the goals of the recently adopted long-range plan:
  - Safety and Security:
    - Critical Crash Rate Factor; and
    - Injury and Fatality Rates.
  - Reliability:
    - Road Classification;
    - Traffic Flows;
    - Truck Percentage;
    - Pavement Rating;
    - Bridge Condition; and
    - Access Control (full, partial, by permit, none).
  - Economic Opportunity:
    - KYTC Score;
    - Economic Cabinet Score; and
    - Economic Development Score.
  - Local Project Support.

  Vermont's HSPP includes the performance measure framework shown in Table 13 that links directly to LRTP goals, although the application of this system is still in progress.

Literature on performance measurement and performance-based planning and programming continues to expand rap-

Table 11. Mn/DOT strategic direction and plan policies.

Strategic Direction/Goals	Plan Policies
Safeguard What Exists	1 – Preserve essential elements of existing transportation systems.
	2 – Support land use decisions that preserve mobility and enhance the safety of transportation systems.
	3 – Effectively manage the operation of existing transportation systems to provide maximum service to customers.
Make the Network Operate Better	4 – Provide cost-effective transportation options for people and freight.
	5 – Enhance mobility in interregional transportation corridors linking regional trade centers.
	6 – Enhance mobility within major regional trade centers.
	7 – Increase the safety and security of transportation systems and their users.
Make Mn/DOT Work Better	8 – Continually improve Mn/DOT's internal management and program delivery.
	9 – Inform, involve, and educate all affected stakeholders in transportation plans and investment decision processes.
	10 – Protect the environment and respect community values.

Source: Minnesota Statewide Transportation Plan: Executive Summary, August 2003.

Table 12. Framework for the Colorado 2030 Statewide Transportation Plan.

Investment Category	Goals	Program Areas	Performance Measures
Safety: Service programs and programs that reduce fatalities, injuries, and property damage for all users of the system.			
	• Reduce transportation-related crashes, injuries, and fatalities and the associated loss to society.	• Driver behavior (alcohol, young drivers, seat belts, etc.). • Roadway safety (hazardous locations, run-off-the-road, sign replacement, etc.).	• Crash rate. • Fatality rate. • Injury rate. • Alcohol-related incidents rate. • Seat belt usage rate. • Return on investment for designated improvement sites. • Customer perception rating. • Corridor safety assessment.
System Quality: Activities, programs, and projects that maintain the function and aesthetics of the existing transportation infrastructure.			
	• Preserve the transportation system. • Keep the system available and safe for travel.	• Pavement (includes reconstruction). • Bridge. • Roadside facilities, appearance. • Rest areas. • Traffic operations facilities. • Tunnels. • Maintenance of other modes.	• Surface condition rating (fair or better). • Bridge sufficiency rating (fair or better). • Maintenance condition survey.
Mobility: Programs, services, and projects that provide for the movement of people, goods, and information.			
	• Improve mobility. • Increase travel reliability.	• Highway performance. • Alternative mode performance. • Facility management. • Travel Demand Management (TDM). • Road closures. • Corridor preservation.	• VMT growth. • Volume/capacity ratio (V/C) growth • Travel-time reliability (customer perception). • Percentage of travel needs met (under development).
Program Delivery: Support functions that enable the delivery of CDOT's programs and services			
	• Deliver high-quality products and services in a timely fashion. • Attract and retain an effective and qualified workforce. • Foster an environment that respects workforce diversity.	• Strategic support (policy, planning, public relations). • General support (IS, financing, HR). • Program support (project development, design, construction). • Property/equipment.	

Source: 2030 Statewide Transportation Plan and accompanying documents.

Table 13. Vermont performance measures and targets.

Performance Category	Performance Measure	Level of Application	Baseline (2002)	Target
Preservation				
Pavements	Average Condition Index of Vehicle Miles Traveled	Interstate Non-Interstate Primary Off-Primary	79 68 62	Maintain existing conditions
	Percentage lane miles with "very poor" condition rating	Interstate Non-Interstate Primary Off-Primary	1% 7% 23%	Maintain existing conditions
Structures	Number of restricted bridges (weight limits, height restrictions, one-lane bridges)	Interstate Non-Interstate Primary State-owned Off-Primary	0 2 6	0 Maintain adequate connectivity; keep bridges open or provide detour route
	Number of structurally deficient bridges (> 20 feet)	Interstate Non-Interstate Primary State-owned Off-Primary	36 27 116	Maintain existing conditions
	Number of structurally deficient short structures (6 to 20 feet)	Interstate Non-Interstate Primary State-owned Off-Primary	48 50 129	Maintain existing conditions
	Average health index (> 20 feet)	Interstate Non-Interstate Primary State-owned Off-Primary	90 88 84	Maintain existing conditions
Safety				
	Number of major crashes per year	All	1,244 (in 1998)	5% reduction from 1998 to 2008 (per Safety Management System)
	Percentage of high-priority safety needs addressed (high-crash location and high benefit/cost improvement)	All		100% within five years of identification

(continued on next page)

idly, offering increasing opportunities for more shared learning and rapid advances in strengthening the planning and programming linkage.

Policy-Based Investment Categories

As noted previously, the rise of rigorous asset management techniques coupled with funding levels that do not meet projected needs have led to an emphasis on preservation of existing infrastructure as a top priority at both the state and regional level. This interest is being served by three trends: (1) the inclusion of preservation of existing infrastructure as a specific policy goal in long-range plans; (2) the inclusion of preservation as a fundamental category of investment in current programming; and (3) the development and application of sophisticated, analytical asset management techniques to guide tradeoffs and investment decisions in preservation of existing infrastructure assets.

Preservation as a broad, policy-level category of investment has given rise to other broad categories that together provide a comprehensive view of investment options at a policy level. Typically these include, in addition to preservation, operational improvements to the existing system and capacity expansion on the existing systems. How much of a

Table 13. (Continued).

Performance Category	Performance Measure	Level of Application	Baseline (2002)	Target
Mobility				
	Average travel time between major cities	Corridors on Primary Network		No decline in average travel time from current levels
	Maximum V/C ratio on state highways	Urban area downtowns Rural corridors Other (small towns/ villages, suburban corridors, growth areas)		0.9 0.7 0.8
	Percentage of employment within 10 minutes of the Primary Network	All	86% (2000)	Maintain current level
	Percentage of employees living within 10 minutes of the Primary Network	All	76% (2000)	Maintain current level
Environment/Quality of Life				
	Air quality attainment status	All	No nonattainment areas	Maintain current attainment status

Source: Vermont Highway System Policy Plan, June 2004.

limited resource to invest in each policy-level type of activity constitutes a fundamental policy choice in meeting needs and provides a link between the goals of a long-range plan and how those goals will be pursued in programming investments. Because of restrictions and requirements on how funds from various federal and state programs can be used, most states, including those interviewed, present information on project funding and programmed investments in several different formats, e.g., by type of activity, by mode, by funding source, or combinations of these. This complexity helps to provide different audiences with appropriate views of what investments are being proposed and their relationship to one and other. **The linkage of plans and programs appears to be made more transparent . . . and stronger . . . when there are clear "crosswalks" between types and categories of investment that allow projects to be traced back to plan policies and goals.**

Table 14 indicates the basic categories of investment as they are expressed in the plan and program documents of the states interviewed. As the table suggests, there are some significant differences among the states' categories of investment that have implications for how well plans currently are linked to programs.

- **Colorado's** LRTP goals and investment categories are identical;
- **Kentucky's** investment categories reflect directly the sources of funds being used;
- **Minnesota** requires districts to present proposed investments organized by policy;
- **Missouri** and **Vermont** use versions of the preservation/ operational improvements/capacity expansion policy-level investment framework; and
- **Oregon** uses an extensive list that combines mode, funding source, and policy-level categories.

Another increasingly common "category" of need and/or investment is an outgrowth of the effort in many states and metropolitan regions to designate a "system of statewide significance," i.e., a subsystem of the overall highway network that constitutes an investment priority for the state or the region. As a matter of linking plans and programs, a focus on a system of statewide significance, in effect, creates "tiers" in the performance measurement process, indicating where enhanced performance is most important.

Several of the agencies interviewed have a system of statewide significance, in one form or another:

- **Colorado** has a network of 350 "interregional corridors" that are the basis for plans around the state;
- **Kentucky** has a 5,000-mile "backbone system" that represents roughly one-quarter of the state-owned system;

Table 14. Major categories of investment.

State	Major Investment Categories
Colorado (same as goals)	• Safety • System quality • Mobility • Program delivery
Kentucky (reflects budget structure)	• Fixed-cost budget items (maintenance, resurfacing, debt service, administration, revenue sharing, state police) • State program • Federal program
Minnesota	• By 10 policies, district by district (see Table 11)
Missouri	• Taking care of the system • Safety needs • Regional and emerging needs • Major projects
Oregon	16 categories of investment; the following 5 account for 90 percent of available funding: • Pavement preservation • Highway bridge • Modernization • Safety • Operations
Vermont	• Preservation • New capacity • Safety/operational • Access management

Source: Various web-based planning documents or material supplied by interviewees.

- **Minnesota** has an Interregional Corridor System that represents just less than half of the state's Trunk Highway system; and
- **Vermont** has a Primary Network of Interstate highways and other primary routes that are important for interregional connectivity and today account for 60 percent of travel on the state highway system.

Applying and Using Performance Measures

Having a performance measurement framework in place, including specific measures and/or targets, is only part of the process. To create a direct and strong link from plan to program, the performance measures, however they are defined, should be used in three ways: (1) to regularly measure and report progress against plan goals as programmed investments are made, (2) to help establish priorities among potential projects and investments, and (3) to allocate funds to project sponsors or subareas in support of priority projects.

These steps in the use of performance measures are in evidence only in limited circumstances among the agencies interviewed, conceivably reflecting what is occurring in other states across the country. That is, there are limited instances where there is a direct line from reporting of measured performance on the system to regular reports for managers and policymakers, to determination of project priorities on performance measures, to allocation of funds based on these priorities.

More often than not, a disconnect seems to exist at the point of using performance measures to set project priorities and allocate funds. In these steps, factors that are not part of a "performance measurement framework" frequently come into play. These factors include:

- Very real difficulties in making reliable, credible estimates of project impacts of various types;
- The need to keep already committed projects moving ahead when available funding remains limited;

- The need to invest in projects that may have been earmarked for funding through federal or state processes outside the traditional planning process, commanding funds that might have been used elsewhere; and
- Resolving real or perceived geographic or jurisdictional "equity" problems in fund allocation and state-level priority setting.

Among the state DOTs interviewed, Minnesota has perhaps the most elaborate performance reporting and tracking process. Mn/DOT districts submit annual District **Operations Performance Data Summary Reports** that describe in detail trends and current status across a host of measures that are part of the overall performance-based planning process. The reports address key budget activities as summarized in Table 15 and identify by district whether indicators are at or above target, below target, or need intervention.

The use of performance measures in prioritization of projects for programming or, more accurately, the use of prioritization criteria that reflect plan goals and policies, is widespread among the agencies interviewed. This is due, in part, to the extensive delegation of planning and prioritization responsibility to local or regional partners, a feature discussed more fully in Section 4.2.2, "Communications." Providing a large role for local interests in prioritization has required development of processes that can be used consistently from one region or area to another, i.e., guidelines and measures for their application that are developed jointly by state and local participants and whose use is overseen by the states. Examples of such guidelines follow:

- **CDOT's 2035 Regional and Statewide Transportation Planning Guidebook (May 2006)** and the **CDOT Operating Manual for MPO Transportation Planning (June 2005)** outline process and criteria for prioritization that directly reflect LRTP goals.
- **Mn/DOT** provides district offices and ATPs with extensive guidance and consultation on plan development, prioritization, and programming, including **Mn/DOT District Long-Range Plan Guidance** (updated April 2004 and currently being updated).
- **MoDOT's Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making (March 2004)** outlines performance measures and criteria linked directly to the state's plan goals.
- **ODOT** provides an on-line **STIP User's Guide** and a **Citizen's Primer: Oregon's Statewide Transportation Improvement Program** document that describes prioritization, criteria, and process for the state's ACTs and other stakeholders.

Both large MPOs interviewed also have rigorous arithmetic schemes for project evaluation and ranking that are spelled out in detailed guidance for use in annual or biennial

Table 15. Performance measures that Mn/DOT districts report.

Budget Activity	Performance Measures
State Roads Infrastructure Investment and Planning	• Product or Service: State Roads Investment. *3 Pavement Measures.* *3 Bridge Measures.* Interregional Corridor Travel Speed. *3 Congestion Indicators.* *1 Transit Indicator.* *4 Safety Indicators.* • Product or Service: Construction Project Development. *11 Indicators.* • Product or Service: Construction Project Management. *2 Indicators.*
State Roads Operation and Maintenance	2 User Satisfaction Measures. • Product or Service: Clear Roads. *3 Measures.* • Product or Service: Traffic Management. *3 Indicators.* • Product or Service: Fleet Management. *4 Indicators.*

Source: District Operations 2004 Performance Data Summary Report, June 2005.

"calls for projects" as part of the programming process. DRCOG in Denver has a document entitled, **Policy on Transportation Improvement Program (TIP) Preparation: Procedures for Preparing the 2007 to 2012 TIP,** and the Met Council in the Twin Cities uses a two-stage screening and ranking process for prioritization that ties directly to goals in the region's **Transportation Policy Plan**.

The use of performance measures and related prioritization criteria in funding allocations is not nearly as well developed, however. Because funding is constrained and is virtually always considered inadequate to meet needs regardless of how they are defined, most states have found it politically and practically impossible to use performance-based criteria exclusively in allocating funds. In most instances, fund allocation to subareas, regions, or project sponsors includes a combination of additional factors, including highway system size, system use, and/or prior year's allocations. Examples of additional factors used by states to allocate funds follow:

- In **Colorado, Statewide Program** allocations to regions are based largely on performance factors. Strategic Project funding is set by the legislature, but **Regional Priorities Program** funding is allocated by a formula using VMT (45 percent), lane miles (40 percent) and truck miles (15 percent) as factors.
- In **Minnesota,** allocations to the ATPs are made through a combination of performance-based factors and system characteristics focused on major goal areas, e.g., funding for preservation is allocated using bridge and pavement condition measures, lane miles, VMT, and heavy commercial VMT; funding for safety improvements is allocated using data on fatal incidents and injuries; and funding for mobility improvements is allocated based on VMT, congested VMT, buses, and future population. State funds for county road improvements in 87 counties are allocated based on vehicle registration, lane miles, needs, and "equalization." State funds for municipal road improvements in 130 municipalities are based on population and needs.
- **MoDOT** allocates funds to districts using a combination of performance-based factors and area or system characteristics that vary by improvement category and funding source.

It is also common to have funding categories available that can accommodate projects or investments that for one reason or another do not fit well in the standard prioritization process. For example, "pools" of funds are frequently created to address broadly defined routine improvements and activities that may be small in scope, that urgently need action, and/or that address specific, high-priority state policy objectives. These funds are typically allocated for projects by headquarters staff based on local and district requests. Colorado, Kentucky, Minnesota, and Oregon have "pools" of funds to allow increased responsiveness to a variety of circumstances.

Finally, allocated funding is made more flexible in many states by allowing region or district offices to vary the use of allocated funds by a percentage amount at local discretion. Colorado, Minnesota, and Missouri have explicit procedures for exercising this type of discretion at the district level.

4.2.2 Communications

Survey results as well as interviews emphasized the importance of clear, open communications as critical to strong planning-programming linkage, both within the agency and externally with stakeholder groups. The vast majority of the agencies responding to the survey and nearly all of those agencies interviewed indicated that communication both internally and externally, with regional staff as well as stakeholders, was regular and productive.

Extensive Stakeholder Involvement Processes

Most of the agencies interviewed described extensive stakeholder involvement processes that run nearly continuously in support of decentralized planning and programming activities overseen and guided by the state DOTs, MPOs, and RPAs in small urban and rural settings. Representatives of the MPOs and RPAs that were interviewed were generally complimentary of and satisfied with the relationships and communications that are well established in most of the cases examined in the project. Debate and dissatisfaction, where it was voiced, was largely a matter of predictable unrest over how much funding was being made available to particular sponsoring agencies or subareas of the states, a problem whose cause was most often associated with insufficient funding levels rather than disagreement with allocation procedures, with some exceptions.

Communications in Separated Organizational Structures

Good communications can overcome issues arising from separation in organizational structure. Inside state DOTs where planning and programming functions are separated in the organizational structure, there was a strong sense that effective communications overcomes whatever problems might arise out of the organizational separation.

Communications Throughout the Agency

There were instances, however, where the direction being taken through the planning-programming process might not be fully understood, appreciated, or applied well by the

remainder of the DOT staff, pointing to the importance of another type of linkage beyond that of planning and programming, i.e., the linkage between those responsible for planning, programming, and policy and those responsible for program implementation and project delivery in the field. This issue, or linkage, is of increasing importance because of the added significance being given today to the impact of transportation improvements and investment on the "character of communities," a topic that is the subject of extensive new, nationwide government initiatives such as "Context Sensitive Design."

Communication with Financial and Budget Offices

Finally, despite a general consensus that good communication is critical to the planning-programming linkage and that good communication is, in fact, a feature of most agencies' processes, the interviews did expose another area of interest and concern: the nature and extent of communication between those with planning and programming responsibilities and those with budget and finance responsibilities. In today's financial environment and with the introduction of new "innovative" financing techniques, decisions made in the programming environment about funding sources and funding flows can have serious consequences for agency cash management that have legal as well as regulatory implications. Planners and programmers may be unaware of the impacts that various project funding decisions have on cash flow management. Often finance and budget officers are brought to the programming process and project funding decisions after the fact. Minnesota has introduced a process to bring budget and finance managers into the programming process on a regular basis, and Kentucky's programming process is directly tied to the state's budget process and its programming decisions guided by a formal cash management oversight process.

4.2.3 Leadership

Sustaining support from both senior career officials as well as political leadership was considered critical to ensuring that programming and investment decisions were reflective of long-range plan goals and policies. There are several dimensions to the leadership issue, however. Attention and sustained support for linkage by senior agency professionals is one key dimension. Knowledge of the planning-programming process and willingness to follow it on the part of elected officials is another dimension, i.e., allowing an objective, analytical process to guide priority setting and investment decisions.

Agency and Program Management Support and Capacity

From an agency and program management standpoint, agency interviewees felt generally that they have strong and continuing support for initiatives and processes that contribute to a strong planning-programming linkage. Behind this belief, however, was the seniority and longevity of senior managers within individual agencies. The more tenure that senior managers had, the stronger the sustained support for steps to better link plans and programs, e.g., the introduction and application of data-driven, performance-based planning and programming.

An additional factor is the staff capacity available to conduct and oversee increasingly sophisticated analytical processes *and* to carry out the increasingly extensive outreach and communications activities that now take place on a near-continuous basis in support of planning-programming linkage. Staff shortages were mentioned as the most obvious problem in terms of capacity. One state indicated that its planning and programming staff was 25 percent below staff levels of several years ago, while the complexity of the processes required and the time needed for paperwork and communication continue to mount.

Staffing is always in a state of flux, influenced significantly by state, local, and agency human resources and personnel rules and procedures, most notably state caps on either personnel budgets or numbers of authorized positions. In the states interviewed, there has been an ebb and flow of senior agency leadership even in the time the project has been under way. Senior officials from Mn/DOT and from KYTC responsible for advancing steps to build a strong planning-programming linkage have retired, leaving a potentially important void or vacuum in some agencies and in others only a minimal impact. In other agencies, issues affecting the planning-programming linkage are not among the most important topics occupying management interest and energy; therefore, business as usual continues with limited impetus to advance on the linkage issue.

Elected Officials and How They Are Involved

There has clearly been a move away from processes in which investment decisions were largely the purview of or heavily influenced by elected officials attempting to gain advantage for their districts or constituents rather than addressing the most critical transportation needs. There are agencies and areas where there is still a strong political influence on priority setting and investment decision making, however, i.e., where the interests of elected officials are more focused on projects and project advocacy than on maximizing the desired outcomes of transportation investment. Interviewees indicated a need to continuously educate elected officials on the planning-programming process and its value. Also the project team noted that those states with an independent transportation commission guiding DOT activities, rather than a department head appointed by the governor,

seemed able to better maintain a policy-level, outcome-oriented focus among elected officials.

4.2.4 Organizational Structure

One of the principal issues around which the project was initially conceived was the presumed importance of where the planning and programming functions "resided" within the overall organizational structure, i.e., were they the responsibility of largely separate units under different senior managers or were they brought together under a single senior manager, if not carried out in the same business unit. State DOT, MPO, and RPA respondents indicated that close linkage in the structure of the organization is an important factor in establishing and maintaining a strong plan-program link, although, as noted in Section 4.2.2, strong communications can overcome separation in the organizational scheme.

From an organizational standpoint, the models in the states interviewed are interesting, as is the phrasing that has been adopted to describe the relationship between the planning and programming responsibilities. Two extremes exist among two of the states that may be among the most advanced in linking plans to programs:

- In **Colorado,** the planning and programming responsibilities are separated: the Transportation Development Division guides the planning activity; the Office of Financial Management and Budget prepares the STIP. It is important to note the major role of the budget and financial arm of CDOT in programming, given the observations about the growing importance of this link made in Section 4.2.2, "Communications."
- In **Minnesota,** the traditional planning and programming titles have been submerged with both functions housed in a single Office of Investment Management within the Division of Program Management.

Other agencies interviewed have organizational structures that fall between these two extremes, suggesting that other factors may be a greater influence on the strength of the plan-program link than simple placement of functions in an organization chart.

4.2.5 Organizational Culture

Because DOTs historically have had as their major mission the design and construction of facilities and because this focus is shifting to care and operation of these facilities, there is a strong, natural emphasis on project delivery and "outputs" of agency activities. Current planning, on the other hand, is shifting toward the "outcomes" of investment defined in far broader terms. It should be no surprise that this split in the culture, especially in DOTs, persists and is easy to see on a daily basis. Interviewees noted the culture issue as one that lies more between agencies' project management staff and business units and the planning and programming units, than between planners and programmers, as noted above.

The other aspect of culture that was noted for its absence in a significant number of instances was the degree to which state DOTs and local project sponsors and implementing agencies share the same vision and goals. Interviewees tended to play this aspect of culture down, acknowledging that their communications and extensive involvement with stakeholder organizations at the local and regional levels is effective in merging vision, goals, and even the criteria for what constitutes a priority investment. However big a "gap" may exist, interviewees felt that while the gap may not always be bridged smoothly or without disagreement, consensus is an expected outcome routinely achieved as an outgrowth of good communications.

4.2.6 External Influences

Support from agencies outside DOTs and MPOs for transportation planning and investment decisions was another factor that was not widely evident through the survey process, but not felt to be of paramount importance in sustaining strong planning-programming linkage. None of the agency interviewees, in fact, had strong opinions about the lack of coordination across agencies. At the state DOT level, it was clear, however, that a great deal of progress still needs to be made in integrating the policies, programs, and resources of independently operating state agencies on environmental, economic development, and human service delivery issues. Interviewees implied that this need was for appointed officials in the departments to address and resolve. Again, a focus on improved communications provides a logical starting point.

4.2.7 Stronger Data/Analytics

The desire for stronger analytics in support of planning and programming was one expressed by MPOs and RPAs, notably those from small urban and rural settings. The implication is that the increased sophistication that is being applied by states and major MPOs in technical planning and analysis is not yet available to smaller agencies, which is a frustration, perhaps because expectations (and demands) of federal or state officials exceed these agencies' capacity to deliver. For the most part, state DOTs were involved in and enthusiastic about steps being taken to employ and enhance their technical and analytical capabilities. There are obvious differences, however, in the degree to which the state DOTs have designed, tested, employed, and effectively used various

analytical tools and techniques that serve to link plans and programs. The largest success story is the use of asset management systems to guide preservation investment decisions. Congestion management, operations, and larger community goals, e.g., economic development, still are ripe for improvement through analytics in every instance.

4.3 Actions in Other States

The experiences and ongoing efforts of each of the six states interviewed for the project are revealing in terms of steps that are likely to strengthen the planning-programming linkage. These experiences, however, also are being mirrored in many other states and MPOs around the country. Brief descriptions are provided below of additional examples that parallel observations growing out of the surveys and interview findings. These examples provide a somewhat broader basis to guide efforts to further enhance the planning-programming linkage.

4.3.1 Policy-Oriented, Performance-Based Plans

Prior sections illustrated how most current state and regional LRTPs are (1) adopting a policy orientation rather than a project orientation, (2) incorporating a goal and objective framework that is focused to a significant degree on achievement of broad, strategic outcomes rather than traditional outputs, and (3) attempting to set investment priorities by applying measures of performance that map directly to these broader goals. A host of other states are moving down this road as well, although the pace of progress varies from state to state. The following examples highlight experiences in several additional states that illustrate this point:

- **Arizona.** Arizona DOT's LRTP, Move AZ, is constructed around five goals that reflect broad outcomes, a set of closely parallel performance factors and a set of measures associated with each factor for use in evaluating project impacts and priorities. This framework is summarized in Table 16. Supporting this construct are a set of policies adopted by the Arizona Transportation Board and the state legislature that further articulate these goals.
- **California.** California uses a unique funding allocation system that supports an Interregional Transportation Strategic Plan (ITSP) and a Five-Year Program as well as regional transportation plans and programs around the state. In constructing both the interregional and regional programs, a two-part evaluation is used. First, the performance measures in Table 17 are used to demonstrate consistency of the plans and programs. In addition, agencies are asked to report against their unique goals and measures.
- **Washington.** Policies that drive prioritization in Washington State have been enacted as state statute. For routine maintenance activities, target levels of service have been established that guide fund allocation. For preservation

Table 16. Move AZ goals, performance factors, and measures.

Plan Goals	Performance Factors	Performance Measures
• Access and mobility • Economic vitality • Safety • Stewardship • Environmental sensitivity	• Mobility and economic competitiveness • Connectivity • Safety • Preservation • Reliability • Accessibility • Resource conservation	• V/C (in person miles) • Hours of delay • Ability to pass on two-lane facilities • Travel time in priority corridors • Crash rate • Injuries • Older road reconstruction • Hours of incident-related delay • Bicycle suitability • Bus turnouts • Mobile source emissions • Fuel consumption • Sound walls • Consistency with local plans

Source: Move AZ: Long-Range Transportation Plan, September 2004.

Table 17. California performance indicators and measures.

Indicator	Measure
Safety	• Fatalities per VMT • Fatal collisions per VMT • Injury collisions per VMT • Fatalities per passenger mile (transit)
Mobility	• Passengers hours of delay per year • Average peak-period travel time • Average non-peak-period travel time
Accessibility	• Percentage of population within a quarter mile of a rail station or bus route
Reliability	• Travel-time variability (corridor) • Percentage of vehicle arriving at destinations no more than 5 minutes late
Productivity	• Average peak-period vehicle trips (corridor) • Average daily vehicle trips (corridor) • Average peak-period vehicle trips × occupancy rate (corridor) • Average daily vehicle trips × occupancy rate (corridor) • Percentage of average daily vehicle trips by 5-axle trucks (corridor) • Average daily vehicle trips by 5-axle trucks (corridor) • Passengers per vehicle hour (transit) • Passengers per revenue mile (transit) • Passengers per train mile (transit)
System Preservation	• Total number of distressed lane miles • Percentage of distressed lane miles • Percentage of roadway at given International Ride Index (IRI) levels
Return on Investment/ Life-Cycle Cost	• Travel time per $1,000 invested • Crashes and fatalities per $1,000 invested • Operating cost per $1,000 invested • Access improvement per $1,000 invested • Rail/transit reliability improvement per $1,000 invested • Emissions reductions per $1,000 invested • Miles of service per $1,000 invested

Source: Interregional Transportation Strategic Plan.

activities, pavement and bridge management systems reveal priorities that are evaluated based on lowest life-cycle cost, as mandated in statute. Mobility improvements are evaluated through a separate prioritization process that uses screening criteria and a scoring methodology based on cost-efficiency, community support, environmental impacts, modal integration, and land use considerations.

- **Wisconsin.** The Wisconsin Transportation Projects Commission (TPC), with Wisconsin DOT (WisDOT) support, prioritizes projects in the Major Highway Development Program. Five factors and related measures and weights are used in the process, as shown in Table 18.

4.3.2 Investment Categories

One of the fundamental dilemmas under recent and continuing funding constraints is how to best allocate funds among fundamental types of investments. The search for a clearer focus on how to best balance allocation of resources among these categories of improvements and the tradeoffs among them has led many states to distinguish between preservation of the existing system, operational improvements on the existing system and system expansion, as described in the previous section. Some examples of other states that are moving in the same direction follow:

Table 18. Wisconsin's major project prioritization process.

Factor	Measure
Economic	**Competitiveness of Existing Business** • Travel cost reduction versus construction cost • Existing population and business/tourism volumes **Attractiveness for New Business** • Increased business productivity; new business attraction • Unique regional characteristics **Improved Connections Between Economic Centers** • On strategic network or NHS
Traffic Flow	• Level of service
Safety	• Crash rate • Crash severity • Pedestrian/bicycle considerations
Environmental	• Effects on natural resources • Effects on physical resources
Community Input	• Public support (or opposition) • Consistency with metropolitan or local plans

Source: Information Paper Number 2: Major Highway Projects Evaluation Process, Transportation Projects Commission, May 2000.

- **Arizona.** Arizona DOT has adopted three broad investment categories or programs, each with a number of subprograms that are both modal and activity based. The three broad investment categories are system preservation (including safety investments), system management, and system improvements (including major capital projects).
- **Washington.** Washington State DOT (WSDOT) uses a program structure that is common to its long-range plan and its program. Investment categories include maintenance, operations, preservation (pavements, structures, and other facilities), and improvements (mobility, highway safety, economic initiatives, and environmental retrofit).
- **Wisconsin.** The Wisconsin transportation budget has two major subprogram categories: major highway development (projects costing more than $5 million with higher design or operational characteristics) and state highway rehabilitation (SHR). The state TPC, with WisDOT support, evaluates and prioritizes candidate projects. Local officials prioritize SHR projects using state management system data.

4.3.3 Fund Allocation

How available funding is allocated to subareas of the state, project sponsors, and/or program categories is the bottom-line test of the link between plans and programs, i.e., does the money follow the performance-based needs? This issue lies at the intersection of politically and technically based decision making and typically involves a mix of factors that extend beyond analyses of system performance as a basis for investment. States other than those interviewed confirm the varied mix of approaches to allocating funding:

- **Arizona.** Historically, the Arizona Transportation Board has allocated resources to three areas of the state. Maricopa County (Phoenix) receives 37 percent of available funding; Pima County (Tucson) receives 13 percent; and the 13 remaining Arizona counties split 50 percent.
- **California.** The California STIP contains two broad programs: the Interregional Transportation Improvement Program (statewide projects) and the Regional Transportation Improvement Program. The interregional program receives 25 percent of funds available to the STIP, with project priorities set by the California DOT (Caltrans) in cooperation with MPOs/RPAs. The 75 percent of funds available to support the regional program is suballocated by formula to counties.
- **Washington.** WSDOT uses a mix of performance measures and systems characteristics in allocating funds to regions and project sponsors.

4.3.4 Systems of Statewide Significance

Limited funding, increasing travel demand, and ever-growing investment requirements have prompted many states to differentiate the routes and/or corridors that may be of greater importance to the state as a whole, despite their traditional functional class designation or their ownership. In many cases, the motive for designating "systems of statewide significance" grows out of a concern that adequate funding for maintenance and preservation be guaranteed first to higher-design, higher-volume facilities that are the responsibility of the state. Another major motive is the need to focus investment on those portions of the network that are most important to future economic growth. These subsystem designations create tiers in states' investment decisions. A number of states in addition to those interviewed have designated "systems of statewide significance":

- **Florida.** Florida statute has established the Florida Strategic Intermodal System (SIS). The SIS is multimodal and includes hubs, corridors, and connectors identified by the level of transportation activity they support, design standards, and their impact on economic connectivity. Florida DOT (FDOT) has as a goal to allocate 75 percent of available funds to the SIS outside of urbanized areas with populations of more than 200,000. Within the Florida SIS is a highway subsystem, the Florida Intrastate Highway System (FIHS). It was created by an act of the state legislature in 1990 and includes 4,035 miles (of which 3,943 currently exist), made up of Interstate highways, Florida's turnpike system, selected urban expressways, existing major interregional and intercity arterial highways, and new limited access facilities.
- **Indiana.** Based on levels of use and connectivity, Indiana has developed a three-tiered structure in its highway system. The primary tier of facilities are the Statewide Mobility Corridors that, among other characteristics, connect every community of 25,000 or more across the state. Regional Corridors and Local-Access Corridors complete the three-tiered designation.
- **Michigan.** Michigan DOT has identified 11 corridors that make up its Corridors of Highest Significance, a subset of facilities that carry the highest volumes of traffic, connect the state's centers of commerce, and are the focus of priority investment now and in the future.
- **Ohio.** Beginning in 1993, Ohio designated 3,360 miles of the state-owned 19,000-mile highway system as Macro Highway Corridors. "Macro" refers to the scope of the system, which includes multimodal hubs, clusters, and corridors, as well as its focus on economic growth. In the ACCESS OHIO 2004-2030 long-range transportation plan, an additional 296 miles were added to the system.
- **Washington.** The Washington state legislature authorized designation of a system of Highways of State Significance (HSS) to be updated at least every five years. The HSS includes roughly half of the total state highway system mileage, or approximately 3,600 miles.
- **Wisconsin.** Wisconsin has developed the Corridors 2020 Backbone System consisting of 1,550 miles of freeways and expressways connecting major economic areas and generators. Wisconsin also designated another 2,100 miles of Corridors 2020 Connector Routes out of a state Trunk Highway network of 11,800 miles.

4.3.5 Corridor-Based Planning and Programming

In recent years greater attention has been paid to corridor-based planning and investment. One impetus for this has been the need to more cost-effectively integrate design and construction among projects that might have been undertaken independently in the past. The benefits include the potential for reduced cost overall and the potential to minimize disruption during construction. Corridor-based planning processes are being used in a number of states in addition to those that were interviewed, although the notion of corridor-based planning is not uniformly accepted or practiced. Two examples of corridor-based planning follow:

- **Arizona.** Arizona has identified a number of Regional Corridor Study Areas as part of its Move AZ LRTP.
- **Michigan.** Michigan's Corridors of Highest Significance are the focus of specific planning and programming efforts, resulting in specific, multiyear initiatives to meet needs throughout the corridors' length.

4.3.6 Decentralized Responsibilities and Communications

Most states have adopted processes that create meaningful, formal opportunities and procedures for a balance of centralized and decentralized activities in planning and programming. In many cases, planning and priority-setting responsibilities are delegated to regional and district offices with formal guidance from headquarters and local support (if not leadership) from formally established local and regional stakeholder groups.

To make decentralization work effectively, there must be an emphasis on communications, both within the organization, i.e., from headquarters to regional or district office staff, and from the DOT to local and regional stakeholder organizations, as well as a willingness on the part of regional staffs to follow headquarters direction. Delegation to district offices and strong communications programs are thought to be

widespread among the states, based on survey results noted earlier.

4.3.7 Intermediate-Range Plan Documents

Many states have found it useful to bridge long-range plans and STIPs with intermediate-range documents. Intermediate-range documents help to clarify the progression from policy-level pronouncements to specific investment priorities to formal budget development, cash flow, and project management. They also provide additional opportunities to formulate and apply definitions that more closely link specific investments to plan polices and goals. Examples of states using intermediate-range plans follow:

- **Arizona.** Arizona uses a five-year Transportation Facilities Construction Program for highways and airports to focus attention on projects for which expected revenues can be identified.
- **Florida.** Florida prepares a 5- to 10-year component and annual performance report to its LRTP as well as an annual 10-year Program and Resource Plan. The Program and Resource Plan constitutes the link between the long-range plan, FDOT's program, and legislative budget requests.
- **Pennsylvania.** PennDOT prepares a 12-year program that encompasses capital investments over the period.
- **Washington.** WSDOT annually develops a 10-Year Capital Improvement and Preservation Program (CIPP) from its long-range plan using a prioritization process mandated by the state legislature. Based on projected funding levels, the CIPP is reduced to a Six-Year Implementation Plan that is funded in the state's two-year budget cycle.

The characteristics of plans, programs, and processes highlighted above represent only a few of the examples that parallel those described by interviewees. They serve, however, to reinforce the potential importance of a number of factors in the effort to strengthen the planning-programming linkage.

SECTION 5

Conclusions and Major Themes

5.1 Initial Hypotheses

The examination of factors that support the planning-programming linkage was carried out with an eye toward several initial hypotheses. These hypotheses are described below:

1. **It is desirable (and required in Federal Joint Planning Regulations) that long-range plans, both statewide and regional in scale, directly influence the programming of projects for implementation.**

Evidence from surveys of and interviews with state DOTs, MPOs, and smaller RPAs strongly confirm that they desire to strengthen and maintain a clear, direct connection between the direction provided in LRTPs and the projects and investments endorsed in shorter-term programming. Survey respondents from all 18 state DOTs and all 6 MPOs and RPAs agreed that a strong linkage is important.

2. **Absent a strong link between long-range planning and programming, progress in implementing long-range plans and meeting plan goals will be slowed or jeopardized.**

Several aspects of the planning-programming linkage remain problematic despite the broad desire to see it strengthened:

- Measuring the planning-programming linkage has become more difficult. The connection between broad plan policies and specific projects is often indistinct and difficult to measure. The link to programmed investments must be traced through intermediate stages and activities, including performance measurement systems and intermediate-range plans. Absent evidence that a performance-based process translates policies and goals into measures of impact and related priorities, it is difficult to claim that a strong linkage exists between the long-range plan and shorter-term programs.
- The value of and interest in long-range planning itself also may be diminishing. Funding shortfalls and the rising proportion of funds needed for preservation and maintenance of the existing infrastructure leave less funding available for expanding capacity and construction of new facilities and services, which are the dominant concerns of stakeholders and participants in the planning process.

3. **Many factors affect the degree of linkage between plans and programs.**

Practicing experts identified nearly 40 factors that may be important to a strong linkage, as noted in Table 1 in Section 3. These factors fall into seven major categories:

- Plan structure and content;
- Quality and caliber of data and analytical techniques;
- Organizational structure of planning and programming functions;
- Character of internal and external communications;
- Awareness of and impact of external influences on planning and programming;
- Characteristics of professional and political leadership; and
- Characteristics of planning and programming "cultures" in an organization.

4. **Organizational and related factors play a significant role in the strength and effectiveness of planning and programming linkages.**

Planning and programming are increasingly seen as closely related aspects on the project development continuum, a natural reflection of the longstanding federal policy and regulations. As a result, in many organizations, particularly state DOTs, planning and programming functions have been collocated in the same business unit or under the same senior manager. Where this is not the case, strong intra-agency communications can substitute, in large part, for proximity in the organization chart.

In addition to collocation of planning and programming, there are organizational and structural arrangements where

a more desirable and productive balance might be achieved between technically based decision making and political interests, including (1) the use of state transportation commissions operating between the DOT line organization and state legislative bodies and (2) broad-based, formalized substate organizations of stakeholders with a significant, formal role to play in priority setting under mutually agreed-upon procedures.

5.2 Conclusions

The activities that have been undertaken during this project have led to a series of general themes and conclusions about factors that support the planning-programming linkage. These are presented below in four major categories:

- General themes,
- Plan and program content aspects of linkage,
- Technical aspects of linkage, and
- Organizational institutional aspects of linkage.

These conclusions were presented to and discussed with two relevant TRB committees in San Diego, California, during the July 2006 mid-year meeting. Reactions from members of the Committee on Statewide Multimodal Transportation Planning (ADA10) and the Committee on Transportation Programming, Planning, and Systems Evaluation (ADA50) are summarized at the end of the section.

5.2.1 General Themes

1. **Plan-program linkage is often indistinct, indirect, and difficult to evaluate.**

As long-range plans shift toward policy documents and away from project-specific plans, a direct link to an STIP often cannot be readily seen or tracked. Instead, intermediate measures are needed to determine the extent to which programmed projects and funding allocations implement the plan. These intermediate measures involve:

- The nature and clarity of goals and objectives;
- The degree to which performance measures for goal achievement have been specified and targets established;
- The use of regional or shorter-range plans that recommend specific projects, bridging the LRTP and STIP;
- The availability and use of data to assess the benefit of projects and actions in terms that reflect the plan goals, objectives, and measures; and
- The extent to which projects that provide the greatest progress against goals are assigned priority and allocated funding.

If this sequence is weak or disjointed, it is likely that the linkage between the plan and program will be at best difficult to evaluate and at worst weak.

2. **The integrity and usefulness of the long-range planning process is being threatened.**

Federal policy continues to fine-tune long-range planning and policy requirements. The relevance of long-range planning, however, is threatened and the interest of stakeholders in participating in long-range planning may be declining because of several factors:

- Maintenance and preservation are consuming an increasing share of capital budgets with little left over for system expansion in the service of economic, environmental, or other broader community interests or goals;
- Maintenance and preservation priorities, in turn, can be determined through management systems and other analytical means but excite little passion among stakeholders or politicians in contrast to proposals for new facilities and services;
- The explosion of federal earmarks has diverted scarce funds, often to new projects that are not always the highest priorities of state DOTs or local governments, further limiting what might be done in the way of system expansion as well as undercutting stakeholder interest;
- Continued statutory and constitutional restrictions that limit the use of many states' traditional motor fuel tax revenues to highways dampen multimodalism, further limiting options and the interest of stakeholders; and
- Growing use of popular referenda to approve projects ("ballot box programming") further undercuts long-range planning as a basis for setting priorities and programming available funds.

All in all, there appears to be a significant number of instances in which little is going on in the long-range planning arena to spur and sustain popular interest and participation. Countering this circumstance is the growing recognition that not enough is being done to enhance the travel experiences and expand transportation systems and services. To date, however, this sentiment has not become strong enough to fully reinvigorate broad interest in long-range planning. It more often serves to heighten the intensity of debates over the use of limited funds in the short term.

Beyond funding limitations, there are a host of reasons why "building out of congestion" is not possible, including increasing difficulties in arriving at popular consensus on what improvements to make, often protracted legal squabbling over whether and how to advance specific projects, and continued resistance to raising additional revenues needed to make critical new investments.

3. **The value of long-range planning remains important for several reasons.**

The long-range planning process can continue to ensure that programming focuses on the "right" projects by:

- Engaging leaders, experts, and citizens in setting a clear vision that provides consensus direction for actions and investments, including transportation investments;
- Establishing the balance and rationale for funding allocations to broad categories of investment that represent and frame clear and critical policy choices, e.g., preservation versus operations versus expansion; and
- Establishing the policy context within which shorter-range or regional planning and programming is conducted.

4. **Flexibility in the use of funds is increasingly important.**

Persistent limitations on available funds put a premium on flexibility and creativity in mixing federal and state funds to achieve maximum benefit and timely progress. States that are focused primarily on matching federal funds program-by-program appear to be the most fiscally constrained. States that deemphasize the "siloed" sources of funds, particularly at the federal level, and that are aggressive in maximizing fund flexibility are likely to find a more effective balance in addressing short-range priorities and long-term goals.

5.2.2 Plan and Program Content

5. **Policy plans are being broadly embraced.**

Policy plans offer opportunities to arrive at broader consensus on overall directions and to create mutually acceptable goals. They also avoid layering up individual project proposals over unreasonable timeframes that become too expensive to implement but too difficult politically to remove from a plan. In cases in which DOT leadership does not strongly support long-range planning, however, the policy plans may become so vague that they do not constrain subsequent project selection, e.g., no project is found to be inconsistent with the LRTP. Also, despite how precisely performance measures are defined, where evaluation and project prioritization processes rely only on subjective judgments or qualitative characterizations of a project's impact on goal achievement, the plan-program link cannot be said to be strong.

6. **Intermediate-range plans (between 20-year LRTPs and 5- to 6-year STIPs) are seen as increasingly useful.**

The out-years of long-range plans are accepted as indistinct and not appropriate for firm funding commitments. Short-term programs, on the other hand, do not capture the full life cycle of projects and investments for which funding commitments must be made or sources identified and advanced through today's complicated and lengthy stages of project development. Intermediate-range plan documents are emerging as a helpful product (and process) to connect plans to specific projects, thereby better matching available funding to real project life cycles and timetables. Intermediate-range plan documents are serving as a more useful means of:

- Projecting and firmly committing scarce funds,
- Periodically reevaluating shifting priorities, and
- Revising fund allocations to meet contingencies.

7. **A simple system of major investment categories provides a framework important for a strong link.**

Great variety exists in the broad categories and classifications of investment types in use today. Attention to and clear distinctions between preservation, operations improvements, and capacity expansion investments at some level provide a potentially more direct connection to plan goals, as does use of more sophisticated analytic approaches to assess need and priority. Goal-oriented investment categories appear to reduce the opportunity for less effective funding allocations based on simple geography or system size that do not reflect needs or priorities.

8. **"Pooled" funding, "immediate opportunity" funds, or policy funds provide critical responsiveness.**

Special categories of funds can function as an escape valve to relieve political pressures and to allow timely responses to quickly developing situations or circumstances that require attention faster than plan and program amendment process and timetables allow. These funds also can support mega-projects without large-scale disruption of more routine planning, project development, and programming. Without some rapid-response funding source, the planning-programming process is easily criticized as being too slow and unresponsive to current needs.

9. **"Corridor" focus has variations that can be helpful in sharpening and strengthening the plan-program link.**

"Systems of statewide significance" establish critical corridors or subsystems that are considered the focus of attention in many states. They represent a rationale for focusing investment and differentiating priorities in terms of functional class and geography. A corridor focus for planning also provides a means for assessing system-level needs, priorities, and investment impacts at a scale that is more useful than evaluating separate project or activity-specific impacts.

5.2.3 Technical Aspects

10. **Effective measurement of performance across broad goal areas, and the allocation of funds to improve performance, lies at the core of the plan-program link.**

If a program of projects cannot be justified by objective evidence of the problem or predicted progress against state, community, or agency goals, the program and projects

cannot be said to serve the state or regional plan, i.e., the linkage is weak or nonexistent. Therefore, project sponsors and funding agencies must have credible data in hand to make the case for priority investment, there must be a shared understanding of causal relationships between types of projects and investments and the consequences in relation to goals, and there must be analytical tools available for consistent evaluation of project impacts and consequences expressed in terms of plan goals and objectives.

11. Data- and performance-based planning and programming is on the rise.

Long-range plans are increasingly policy oriented, encompassing broad, community-wide goals and objectives, in part as a reflection of the broadening of federal programs and policies and in part as a result of increasing difficulties in funding and implementing a 20-year project-based LRTP. The parallel emphasis today on management systems provides rapidly improving, increasingly databased means to assess the extent of problems and/or deficiencies and the value of alternative investment options in addressing them. Management systems appear to guide or direct an increasing proportion of investment (albeit primarily in the areas of maintenance and system preservation) and counteract the political tendency to underspend on preservation of existing systems.

Performance-based planning and programming is still in a developing state, however, when it comes to evaluating operational improvements or competing capacity expansion projects among and against each other. In these two areas, causal relationships are still not fully evident or understood, measures are difficult to define, data is often suspect or not available, and transportation policymakers and managers often have no authority to influence or alter critical factors affecting the impacts of alternative investments, e.g., land use and development decisions.

5.2.4 Organizational and Institutional Aspects

12. Collocating planning and programming functions can enhance the linkage.

There appears to be an improved chance of a strong plan-program link when the two functions are being carried out under the authority of the same senior manager and/or when the organization is structured to ensure a strong plan-program interchange. Collocation, however, does not appear to be sufficient by itself to ensure a strong plan-program link, largely because numerous other factors typically are involved, regardless of the organizational structure.

13. Good internal communication can overcome organizational weaknesses.

The disadvantages of not having planning and programming functions housed near each other in the organizational structure can be reduced through effective communications and the commitment of leadership to focus on the linkage.

14. Top-level leadership and support is essential to sustain a disciplined, rational approach to project selection, i.e., to ensure programs reflect and serve plan goals and policies.

Committed senior professional leadership is essential to avoid undue internal and external political involvement or stagnation in designing and applying goal- and performance-based planning and programming processes. Leadership on the political level and the professional managerial level are both necessary; the absence of one can dilute the other.

15. Local/regional committees of citizens and community leaders with formal, defined roles in project review, evaluation, and prioritization help avoid insularity and build consensus.

Establishing a clear sense of resource availability and funding priorities at the local or regional level provides a basis for more effective working relationships and decision making. When resources to address regional priorities are consistently unavailable, interest in the process declines and the impetus to intervene in the programming process through channels outside the planning process is increased, damaging the link between plans and programs. The plan-program link appears to be made stronger where local and regional officials and stakeholders exercise significant formal authority within a process and guidelines that they themselves have had a hand in shaping and that allow a degree of flexibility to assure that local needs can be defined and addressed.

16. The linkage of programs to budget development and financial management is becoming as important as the linkage of plans to programs.

The continuation of multiple, discrete programs ("funding silos"), together with the introduction of new, innovative funding and financing techniques and their administrative and legal requirements, creates greater complexity in financial and budgetary management and oversight. The degree to which DOT and MPO financial and budget offices are involved in the programming process varies widely, but cash management complexities are beginning to require knowledge and/or judgments that go beyond those required in traditional prioritization, programming, and resource allocation decisions. Better ways to integrate programming, budget, and finance functions are needed to take full advantage of funding flexibility and to avoid having the budget process drive prioritization and programming inappropriately.

17. State Transportation Commissions provide an important buffer between the technical and political dimensions of decision making, serving to reinforce rational processes and data-driven decisions.

States without separate commissions appear to have more programming activity occurring and funding commitments being advanced outside the traditional planning-programming process. They also seem to have less distinct or comprehensive analytical processes available to guide decision making. The reverse appears to be true in states with formal transportation commissions, regardless of the wide variability with which they operate. The opportunity to link plans and programs effectively in relation to needs may be greater when actions are focused outside the traditional legislative process. States without commissions also appear to make changes in goals and management approaches more frequently. Consistency of purpose and method appears to be aided by the existence of a commission.

18. DOT and MPO relationships are critical.

The interaction of MPOs and DOTs can determine how effective the program will be in meeting shared or divergent goals. The degree of influence that DOTs and MPOs have on each other and the procedures for interacting play a role in linking plans to programs. Generally, an open, continuing partnering approach to MPO and DOT planning and programming is beneficial to strong planning-programming linkage.

5.3 TRB Committee Member Observations

Attendees at the summer meetings of the TRB Committee on Statewide Multimodal Transportation Planning (ADA10) and the Committee on Transportation Programming, Planning, and Systems Evaluation (ADA50) were asked to respond to preliminary findings from the survey and interview results. In very large part, their reactions reinforced those of the survey respondents and interviewees. This section presents highlights of the committee perspectives in terms of factors they felt to be most important in establishing a strong plan-program link as well as major obstacles to creating and sustaining a strong link.

The two factors most often mentioned as important were each introduced in a variety of ways:

1. **Organizational Structure.** Collocation of planning and programming functions; having the same people carry out both functions; having planning and programming in the same unit; having strong organizational linkage between planning and programming; and having the two together organizationally; and
2. **Performance-Based Planning and Programming Techniques.** Using measures that chart goal achievement; using performance measures in making funding decisions; having a performance-based plan; using performance measures to establish project priorities; and using consistent, performance-based plan and project selection criteria.

Other factors specifically mentioned as important by the committee participants included:

- Collaboration with partners and knowledge of partners' goals,
- Supportive leadership among both senior staff and political leadership,
- Reliable funding sources, and
- Program managers with a firm understanding of the goals–objective–performance measure link.

Obstacles to strong planning-programming linkage generally represent the reverse of or absence of one or more of the factors considered most important. Among the obstacles mentioned by committee participants, two were considered most significant:

- **Lack of performance measures** linked to goals and objectives and the persistent "legacy" of priorities assigned to investments without a basis in performance, and
- **Dominance of short-term political objectives** in resource allocation and the power of local interests in resource allocation when weighed against statewide interests.

Other obstacles mentioned included:

- Inadequate leadership support for performance-based evaluation and selection tools,
- The questionable significance of statewide planning,
- Poor communications between planning and programming units and/or staff,
- Organizational balkanization,
- Lack of outcome-based goals and objectives, and
- Earmarking funds for specific projects at the state and federal level that disrupt local priorities and dilute the already inadequate flow of funds.

SECTION 6

A Guide to Strengthening the Planning-Programming Linkage

Building or sustaining strong linkage between long-range transportation plans and short-term programming and funding allocation decisions presents an array of challenges. In many respects, these challenges grow out of basic circumstances that vary from one state or region to another. For example, the history and evolution of state and local organizations, interrelationships, processes, and techniques can serve to advance or retard the linkage of plans and programs. Similarly, basic philosophies of governance may serve to emphasize the importance of linkage, or to undercut it. More specifically, differing philosophies about how to exercise authority over the expenditure of funds for transportation can reinforce or detract from the linkage.

As a guide to actions that might be taken by agencies interested in strengthening the planning-programming linkage, the findings summarized in the preceding sections appear to suggest an agenda in two parts.

The agenda starts with an assumption that the factors identified and presented earlier are, in large part, the most important ones for improving the linkage of plans and programs and enhancing decision making. One confirmation of this assumption is that few additional factors were suggested by survey respondents, interviewees, or TRB committee participants when given the opportunity to expand the list in Table 1 of Section 3.

The focus of the emerging agenda might lie in two areas depending on the current state of the planning-programming linkage in a given agency.

6.1 The "Head Start" Agenda

Agencies that may feel that they are "behind the curve" in linking programs more effectively to plans might benefit from fuller documentation and more concerted promotion of those linkage factors that already are in broad use. Models of how to build these factors into the state or regional process already exist in many agencies. The following list of 10 factors taken from the earlier analysis illustrates a logical substantive focus for the "Head Start" part of the agenda, i.e., agencies may want to act to ensure:

- Programming is based on a full understanding of a policy framework, the role of data, and technical analysis;
- Planning and programming steps and procedures are well defined;
- Planning and programming functions are closely linked in the organizational structure;
- **Clear, open communications exist between units responsible for planning and programming;**
- **Agency staff maintains a high level of knowledge and skill in planning and programming;**
- LRTP contains specific policy guidance for investment decisions;
- Planning and programming offer flexibility to meet local and statewide needs;
- Senior professional leadership provides sustained support for the vision and the LRTP;
- Political leaders are engaged throughout the process; and
- Regular dialogue and feedback occur between the agency and stakeholders.

(***Bold*** *indicates factors common to both state DOT and MPO/RPA respondents.*)

These considerations as well as others might become benchmarks against which committed agencies would regularly evaluate themselves and the strength of the planning-programming linkage.

6.2 The "Upward Bound" Agenda

A second focus in guiding agencies toward a stronger planning-programming linkage might involve closer examination of and greater encouragement to adapt strategies and embrace key factors that are *not* yet widely in evidence. Such

an endeavor would presumably assist all agencies with planning and programming responsibilities but provide a next step for those already well along the path to a strong plan-program link. The substantive focus for this part of the effort might be on the nine factors most often noted as "not in evidence," i.e., agencies may want to act to ensure:

- Staff and policymakers focus more on outcomes than on individual projects;
- Performance measures are based on goal-oriented outcomes;
- Fund allocation factors are based on performance measures reflecting LRTP goals;
- The LRTP contains a short-range element to guide programming;
- Technical and analytical justifications are strong;
- Policymakers understand the benefits of transportation investments;
- Political leaders know and follow the planning-programming process;
- Implementing agencies support shared vision and goals; and
- Actions of outside agencies reinforce transportation plans and programs.

Even among agencies where the linkage of plans and programs may be well established, there appear to be wide-ranging opportunities to further strengthen the linkage. These nine factors that appear to be least in evidence represent five of the seven broad categories identified earlier in the report and listed below, suggesting there is ample room for actions that can improve and strengthen the planning-programming linkage:

- Plan structure and content (three factors cited by both state DOTs and MPOs/RPAs);
- Leadership (two factors cited by both state DOTs and MPOs/RPAs);
- Organizational culture (two factors cited by both state DOTs and MPOs/RPAs);
- Data/analytical approaches (one factor cited by both state DOTs and MPOs/RPAs); and
- External influences (one factor cited by both state DOTs and MPOs/RPAs).

6.3 A Central Focus for Strengthening the Planning-Programming Linkage

To further focus and guide future actions, the study has pointed to the primary importance of three major topic areas:

- Performance measurement and applications,
- Communications, and
- Leadership.

6.3.1 Performance Measurement and Applications

The transportation industry increasingly recognizes that the critical element in linking long-range plans to short-term investments lies in the ability to arrive at outcome-based goals, define measures of performance that relate to those goals, and use those same measures to set priorities and allocate funds for investment.

Several performance-based planning and programming applications have been highlighted earlier, and the literature on performance-based planning and programming is extensive. Among the most recent and useful references is the final report of NCHRP Project 8-36, Task 47 (*4*). The report provides additional case study examples for state DOTs and MPOs as well as additional references to guide development of effective performance-based measurement systems. Among the most important observations are:

- Successful development and use of performance measures in planning and programming need not be centralized or overly sophisticated.
- Start with the most feasible elements first and build the performance measurement systems and applications from there. Asset management represents an obvious area for direct replication of processes and procedures already broadly in use.
- Regular reporting on performance through all levels of the organization on a periodic basis (more frequently than once a year) helps to integrate planning and programming cultures and expand accountability for performance and goal achievement throughout the organization. Performance measurement, monitoring, and reporting ideally should be part of strategic planning, business planning, day-to-day program management, and executive-level policymaking and budget development.
- Successful performance-based planning and programming efforts link performance to some type of direct agency action. Every agency has it own set of business processes that are hopefully intended to achieve a set of outcomes that are broadly defined and well understood within the agency as well as outside. Often, however, the link between performance measurement and actions that lie at the heart of those business processes is weak, ill defined, or poorly understood. Table 19 highlights for selected states what specific actions are being guided by performance measurement systems.

Another resource that may assist with development and enhancement of performance-based planning and management systems is a web site (www.wsdot.wa.gov/Accountability/Publications/Library.htm) maintained by WSDOT. It provides documents and information on performance management

Table 19. Examples of agency actions based on performance.

Agency	Agency Action Based on Performance
Arizona Department of Transportation	Prioritization of capacity-expanding projects outside of urban areas.
California Department of Transportation	Allocation of resources for State Highway Operations and Protection Program.
Florida Department of Transportation	Prioritization of program funding levels.
Minnesota Department of Transportation	Capital budgeting decisions at the district level. Funding allocation across districts. Adjustment of types of investment in program.
Montana Department of Transportation	Capital funding allocations to districts, systems, and work types; and project programming consistency.
Ohio Department of Transportation	Assessment of staff performance. Allocation of funding across districts. In-person meetings to develop action plans to address performance deficiencies.
Pennsylvania Department of Transportation	Identification of actions in district and bureau annual business plans to improve performance. Quarterly in-person meetings between District Engineers and Deputy Secretary for Highway Administration to review performance and identify actions to meet targets. Similar in-person meetings between Bureaus and Deputy Secretaries.
Virginia Department of Transportation	Staff accountability, performance bonuses. Monthly video conference with Commissioner to review project status for major projects (based on "Dashboard").
Washington State Department of Transportation	Quarterly meeting to review performance with 25 to 30 senior staff.

Source: Cambridge Systematics, Inc. "Effective Organization of Performance Management," 2006.

systems in other agencies, including some whose approaches have been detailed in this report.

6.3.2 Communications

Other factors identified as important in strengthening the planning-programming linkage do not lend themselves to mechanistic or analytical approaches in the way that performance measurement does. Rather, they are dependent to a very large degree on **enriching and expanding dialogue and communications** within and across organizations and key participant groups. While a majority of the agencies surveyed and interviewed felt they do a very good job in communications, the fact that issues related to organizational culture, leadership, and external influences were cited as areas of potential weakness suggests otherwise.

Communications between staffs directly responsible for planning and programming may be effective, but communications with political leadership and policymakers, communications with other units within DOTs or MPOs, and communications with other agencies with parallel agendas and responsibilities appear to be less effective, or even a threat to a strong plan-program link. Resolving apparent shortcomings in these areas, or targeting key opportunities to improve the plan-program linkage, requires a set of generic steps that revolve around enhanced communications as a base, including:

- Recognition and confirmation by leadership that there are a set of weaknesses that are deserving of attention and correction;
- A commitment by leadership to seek ways to strengthen these weakness;
- Identification of key staff members to frame and guide the effort to address them in a comprehensive way;
- A definition of the audiences to be targeted, e.g., various levels of political and policy leadership, agency staff members in other units, and key officials in other agencies with

a responsibility for or role in planning and programming transportation improvements, or their outcomes;
- An assessment of how each of these audiences may be impacting transportation planning, program development, and investment;
- Identification, evaluation, and selection of a set of potential actions that might be taken to turn these weaknesses into strengths or at least neutralize them;
- Assignment of responsibility and resources within the organization to undertake corrective initiative(s);
- Senior leadership support throughout the process; and
- Continuous assessment of the progress and value of the initiative.

Examples provided in the previous sections describe approaches to communications that might be considered a starting point to (1) enhance the role of politicians and policymakers in supporting a stronger plan-program link, (2) ensure that the full agency staff is knowledgeable of and acting in support of plan goals and objectives and related policies in their day-to-day activities, and (3) build mutual understanding and mutually reinforcing polices and procedures across government agencies that may have been in conflict.

6.3.3 Leadership

Politicians and policymakers as well as senior professional leaders must sustain a commitment to a strong plan-program link if progress is to be made. Where leaders of both types have been longstanding, active participants in transportation planning and programming, the challenge to leadership may not be so extreme. Where there is more rapid turnover among the political leadership (i.e., two- and four-year electoral cycles) and professional leadership, a greater effort at regularly briefing and educating leaders may be needed.

Nurturing and supporting political and professional leaders to become more effective supporters of a strong link between plans and programs is, in essence, a specialized aspect of the larger communications agenda. Political and professional leaders may be the single most important discrete audience to target.

A final critical aspect of encouraging strong leadership involves regularly sharing information, including comprehensive documentation of processes, procedures, and progress through periodic reviews and reporting, mandated either through statutory language, regulations, or administrative procedures.

6.4 How to Proceed: A Guide to Strengthening the Planning-Programming Linkage

Moving ahead on an agenda to strengthen the linkage of planning and programming requires action on three fronts:

1. A self-assessment to provide a baseline for action,
2. A strategy and specific actions that address key agency concerns about linkage, and
3. An implementation plan that ensures steady progress.

6.4.1 Self-Assessment

The agency should assess how directly current plans and programs are linked. Adapting the questionnaire presented in Appendix B and applying it with senior- and mid-level managers as well as policymakers and elected officials inside and outside the agency may provide a starting point for a self-assessment.

6.4.2 Development of a Strategy and Actions to Strengthen Key Aspects and Factors

An agenda might be defined initially from the general state of the planning-programming linkage that currently exists. Agencies that may feel they are "behind the curve" in linking programs more effectively to plans might benefit from fuller documentation and more concerted promotion of those **linkage factors that already are in broad use**, i.e., other states/agencies already have working models of how to build these factors into the state or regional process. The list of 10 factors taken from the "Head Start" agenda in Section 6.1 summarizes the substantive measures that might be taken.

A second, alternative focus in guiding agencies toward a stronger plan-program linkage might involve closer examination of and greater encouragement to adapt strategies and embrace key **factors that are not yet widely in evidence**. Such an endeavor would presumably assist all agencies with planning and programming responsibilities but provide focused guidance for those already well along the path to a strong plan-program link. The substantive focus for this part of the effort might be on the factors most often noted as "not in evidence" among survey respondents and interviewees, as listed in Section 6.2.

6.4.3 An Implementation Plan

Success in executing an agenda to strengthen the planning-programming linkage will require that:

- Specific individuals and/or units have formal responsibility for executing whatever agenda emerges;
- Resources—both time and budget—be committed to the effort; and
- Activities and progress be reported on a regular basis.

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APPENDIX A

Expert Interviewees

The individuals listed below were interviewed at the outset of the project to gather ideas about what factors are most important in creating and sustaining a strong link between long-range plans and shorter-term investment programs (STIPs and TIPs).

Practicing Experts

Trip Brizzell, Dallas Area Rapid Transit (DART); American Public Transportation Association (APTA) Planning Chair
Anne Canby, Surface Transportation Policy Project (STPP) Executive Director; former Delaware DOT Secretary
Charlie Goodman, Federal Transit Administration (FTA) Metropolitan Planning Chief
Steve Heminger, Metropolitan Transportation Commission (MTC, San Francisco Bay Area) Executive Director
Hal Kassoff, Parsons Brinckerhoff (PB); former Maryland Highway Administrator
Tom Larwin, San Diego Association of Governments (SANDAG); former Deputy Executive Director
Michael Meyer, Georgia Institute of Technology (Georgia Tech); former Massachusetts Transportation Secretary
Susan Mortel, Michigan DOT Planning and Programming Director
Lance Neumann, Cambridge Systematics, Inc. President
Arlee Reno, Cambridge Systematics, Inc. Senior Vice President
Sandy Straehl, Montana DOT Planning Director

Project Panel Members

Michael Bruff, North Carolina DOT
Michael Hancock, Kentucky Transportation Cabinet
Rosemary Ingram, Kansas DOT
Jay Klagge, University of Phoenix
Ken Leonard, formerly Wisconsin DOT
Donna Lewis, County of Mercer (New Jersey)
Matthew Selhorst, Ohio DOT
Rick Smith, Washington State DOT
Thomas TenEyck, Pennsylvania DOT

APPENDIX B

Survey Instruments

All 50 state DOTs and selected MPOs and RPAs were surveyed to determine what responsible agencies believed to be the most important factors in the planning-programming linkage, and to gain insights on which of these factors were most (and least) in evidence in their respective processes. Respondents are identified in Section 3.

NCHRP Project 8-50

Factors that Support the Planning-Programming Link

Stakeholder Survey: State DOTs

Introduction

Federal regulations require that our transportation investments in the short term – contained in Transportation Improvement Programs (STIPs and TIPs) – should be drawn from Long-Range Transportation Plans (LRPs), both at the state and the metropolitan levels. While this requirement dates from the 1960s, ***the strength of the planning-programming linkage*** varies and is influenced by a wide array of factors.

The purpose of the NCHRP 8-50 project is to identify ***ways to further strengthen the link between planning and programming***. The survey questions below are intended to identify:

- ***Which factors are most important*** in creating and maintaining a strong link between long-range plans and the projects that get programmed and implemented; and
- The extent to which these factors are ***present in the planning and programming process in your agency.***

The factors identified in the survey have been gathered from interviews with planners, capital programming managers and transportation researchers and analysts. Your survey responses will be used in two ways: 1) *to* ***identify factors that may need added emphasis*** in strengthening the planning-programming linkage; and 2) *to* ***identify states and regions that may represent useful case studies*** on how to assure a strong linkage between planning and programming.

Survey Content

Part 1 Agency Information and Preliminary Questions *(1 page)*

Part 2 Aspects of your Agency's Planning and Programming Process *(2 pages)*

Part 3 Opinions about Broad Factors Influencing Planning and Programming Linkage *(1 page)*

Part 4 Opinions about Specific Factors Influencing Planning and Programming Linkage *(6 pages)*

Survey responses will be compiled by Cambridge Systematics, Inc. as the Principal Investigator on the project, and shared with the NCHRP Project 8-50 Panel. Specific responses will not be attributed to individual respondents.

You may complete this survey in electronic format and e-mail it to:

amuszynska@camsys.com

Alternatively, if you prefer to complete this survey in hard copy, please mail or fax your completed response to:

Ms. Agnes Muszynska
Cambridge Systematics, Inc.
4445 Willard Avenue, Suite 300
Chevy Chase, MD 20815
(301) 347-0100 t
(301) 347-1010 f

Part 1. Agency Contact Information and Preliminary Questions

Agency Name: _____

Agency Address: _____

Street

_____

City State Zip Code

Respondent Name: _____ Title: _____

Role in Planning and Programming: _____

Respondent Telephone: _____ E-mail: _____

Responding Agency Type

☐ State DOT

☐ Metropolitan Planning Organization (MPO)

☐ Transit agency

☐ Regional planning/development agency

Preliminary Questions

1.1 Transportation investments are most effective when there is a clear, direct link between **LONG-RANGE PLANS** and **PROJECTS PROGRAMMED IN THE STIP**. *(Please check one box.)*

Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Strongly Disagree
☐	☐	☐	☐	☐

1.2 In my state, **THE LINKAGE** between **LONG-RANGE PLANS and PROJECTS PROGRAMMED IN THE STIP** is… (Please check one box.)

Consistently Strong and Clear	Sometimes Evident	Neutral	Often Weak and/or Unclear	Largely Nonexistent
☐	☐	☐	☐	☐

1.3 In my state, the **STIP PROGRAMMING** process is carried out … *(Please check one box.)*

With a direct link to the Long-Range Plan (LRP)	With some linkage to the Long-Range Plan (LRP)	Neutral	Largely independent of the Long-Range Plan (LRP)	Independent of the Long-Range Plan (LRP)
☐	☐	☐	☐	☐

Part 2. Describe Your Agency Practices and Perspectives

2.1 How are the **PLANNING** and **PROGRAMMING** functions organized in your agency? What unit is responsible for project selection?

2.2 Does your agency's **Long-Range Plan (LRP)** include specific projects, or is it a "policy document"? Does the **LRP** need to be amended frequently in response to programming decisions?

2.3 To what degree does your agency program projects based on measures and/or criteria contained in the **LRP**?

2.4 To what degree do programmed projects tie back to your agency's **LRP**?

2.5 What role(s) do **DOT** district or division engineers/planners have in **PLANNING** or **PROGRAMMING**?

2.6 What effect do changes in project cost and schedule have on your **PROGRAM**? When **PROGRAM** changes are necessary, what role does the **LRP** play in amending the **PROGRAM**?

2.7 Do you believe that changes in your **LONG-RANGE PLANNING** process/plan can improve **INVESTMENT/ PROGRAMMING** decisions? What changes are most needed?

2.8 Does your organization use performance measures in **PLAN DEVELOPMENT**? In prioritization and **PROGRAMMING**? Are factors other than measures of system condition and performance used in prioritization and programming?

Part 3. Broad Factors Influencing the Planning-Programming Link

The linkage between **Long-Range Plans** and programmed projects is influenced by several broad sets of factors.

Please rank the importance of each of the following factors in supporting a direct, clear **LINKAGE** between **LONG-RANGE PLANS** and **PROGRAMS**. *(If two or more factors are of equal importance, rank them the same.)*

Broad Factor/Characteristic	Ranking (1 = Most Important)	Comments (if any)
3.1 Comprehensive and clearly stated Long-Range Plan goals, objectives and measures.	_____	
3.2 State-of-the-art data quality and analysis techniques.	_____	
3.3 Planning and programming functions are closely tied in the organizational structure.	_____	
3.4 Thorough, open communications (internal and external) throughout the planning and programming process.	_____	
3.5 External influences (non-transportation) are well understood and addressed openly and effectively.	_____	
3.6 Political and professional leaders are knowledgeable about and committed to a thorough and objective planning and programming process.	_____	
3.7 Planning and programming "cultures" work in synch.	_____	
Other factors affecting the planning and programming link. *(Please list below if applicable.)*		
3.8	_____	
3.9	_____	

Part 4. Specific Factors Influencing the Planning-Programming Link

The following statements represent **MORE SPECIFIC CHARACTERISTICS** or **FACTORS** that may contribute to a strong link between **Long-Range Plans** and **PROGRAMMED PROJECTS**. ***TWO RESPONSES ARE REQUESTED FOR EACH.***

4A) **PLEASE RANK THE GENERAL IMPORTANCE OF EACH** factor in strengthening the planning-programming link. *(Within each independent section, please rank the component factors with 1 = Most Important. If two factors are of equal importance, they can receive the same number ranking.)*

4B) **IN YOUR OWN AGENCY**, are these characteristics **CLEARLY EVIDENT**? *(Please select 1,2, 3, 4, or 5.)*

Plan Structure and Content *(Goals, Objectives, Measures and Allocation Factors)*	**4A)** **Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** **1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.1.1 The Long-Range Plan (LRP) contains specific policy guidance for investment decisions.	_____	☐	☐	☐	☐	☐
4.1.2 The LRP contains a short-range element to focus programming decisions and respond to changing circumstances.	_____	☐	☐	☐	☐	☐
4.1.3 The LRP contains performance measures tied to plan goals that define needs and measure progress.	_____	☐	☐	☐	☐	☐
4.1.4 A clear link exists between broader policy themes, LRP goals and priority-setting processes.	_____	☐	☐	☐	☐	☐
4.1.5 Performance measures are based on goal-oriented "outcomes" *(e.g., mobility, access, economy, environment, safety, etc.)* rather than on program "outputs" *(e.g., miles of improvement, contracts let, etc.).*	_____	☐	☐	☐	☐	☐
4.1.6 Funding allocation factors are based on performance measures reflecting plan goals and objectives.	_____	☐	☐	☐	☐	☐
Other important aspects of plan content and structure. *(Please list below if applicable.)*						
4.1.7	_____	☐	☐	☐	☐	☐
4.1.8	_____	☐	☐	☐	☐	☐

Analytical Approaches in Planning and Programming	**4A)** **Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** **1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.2.1 Technical/analytical justifications are strong; sound analytical tools are available to assess tradeoffs in resource use and project prioritization.	_____	☐	☐	☐	☐	☐
4.2.2 Assessments of needs *(performance and condition)* are done before funds are allocated.	_____	☐	☐	☐	☐	☐
4.2.3 There are clear procedures for setting project priorities among major types of investments *(e.g., preservation, operational improvements, expansion projects).*	_____	☐	☐	☐	☐	☐
4.2.4 Target levels for preservation can vary based on facility characteristics across the network.	_____	☐	☐	☐	☐	☐
Other important analytical aspects or approaches *(Please list below if applicable.)*						
4.2.5	_____	☐	☐	☐	☐	☐
4.2.6	_____	☐	☐	☐	☐	☐

Planning and Programming Processes	**4A)**	**4B) This factor drives programming decisions in my agency…**				
	Ranking (1 = Most Important)	**1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.3.1 Steps and procedures in the planning and programming process are well-defined, including the role of data, technical analysis.	_____	☐	☐	☐	☐	☐
4.3.2 Programming is based on a full understanding of a policy framework, the planning process and its products.	_____	☐	☐	☐	☐	☐
4.3.3 The planning and programming process allows flexibility to meet local conditions and circumstances.	_____	☐	☐	☐	☐	☐
4.3.4 The consequences and outcomes of programmed investments are regularly monitored and progress is reported against goals, targets.	_____	☐	☐	☐	☐	☐
4.3.5 Financial constraints required in programming projects do not limit the scope of the Long-Range Plan.	_____	☐	☐	☐	☐	☐
Other important aspects of process. *(Please list below if applicable.)*						
4.3.6	_____	☐	☐	☐	☐	☐
4.3.7	_____	☐	☐	☐	☐	☐

Organizational Structure	**4A)**	**4B) This factor drives programming decisions in my agency…**				
	Ranking (1 = Most Important)	**1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.4.1 Planning and programming functions are closely linked in the DOT organizational structure.	_____	☐	☐	☐	☐	☐
4.4.2 Programming is done by the planning function/unit *(rather than the financial/budget unit of the organization).*	_____	☐	☐	☐	☐	☐
Other important organizational aspects of organizational structure. *(Please list below if applicable.)*						
4.4.3	_____	☐	☐	☐	☐	☐
4.4.4	_____	☐	☐	☐	☐	☐

Organizational Culture	**4A)**	**4B) This factor drives programming decisions in my agency…**				
	Ranking (1 = Most Important)	**1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.5.1 Elected and career public officials and their respective agencies support a shared "future" transportation vision.	_____	☐	☐	☐	☐	☐
4.5.2 All implementing agencies support the shared vision and goals.	_____	☐	☐	☐	☐	☐
4.5.3 Staff, policy-makers and stake-holders focus more on policy outcomes than individual projects as a basis for programming.	_____	☐	☐	☐	☐	☐
Other aspects of organizational culture *(Please list below if applicable.)*						
4.5.4	_____	☐	☐	☐	☐	☐
4.5.5	_____	☐	☐	☐	☐	☐

External Influences	**4A)** Ranking (1 = Most Important)	**4B) This factor drives programming decisions in my agency…** 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.6.1 Coordination is strong between transportation plans and plans of other agencies, stakeholders.	_____	☐	☐	☐	☐	☐
4.6.2 Actions of outside agencies *(e.g., public works, zoning, economic development, budget/tax, developers, lenders, etc.),* reinforce transportation planning and programming decisions.	_____	☐	☐	☐	☐	☐
4.6.3 Some level of politically based decision-making is recognized as inevitable, appropriate and openly managed.	_____	☐	☐	☐	☐	☐
Other important external aspects *(Please list below if applicable.)*						
4.6.4	_____	☐	☐	☐	☐	☐
4.6.5	_____	☐	☐	☐	☐	☐

Communications	**4A)** Ranking (1 = Most Important)	**4B) This factor drives programming decisions in my agency…** 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.7.1 There is clear and open communication between organization units responsible for planning and programming.	_____	☐	☐	☐	☐	☐
4.7.2 Regular dialogue and feedback occurs between the DOT and stakeholders.	_____	☐	☐	☐	☐	☐
Other important aspects of communications *(Please list below if applicable.)*						
4.7.3	_____	☐	☐	☐	☐	☐
4.7.4	_____	☐	☐	☐	☐	☐

Leadership *(Political and Professional)*	**4A) Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.8.1 Political leaders know and follow the process and mechanics of planning and programming transportation investments.	_____	☐	☐	☐	☐	☐
4.8.2 Agency staff achieves and maintains a high level of knowledge and skill in planning and programming functions.	_____	☐	☐	☐	☐	☐
4.8.3 Sustained support for the LRP scope and vision is provided by senior professional staff/leadership.	_____	☐	☐	☐	☐	☐
4.8.4 Political leaders are engaged throughout the planning and programming process.	_____	☐	☐	☐	☐	☐
4.8.5 Political leaders understand the benefits and value of specific transportation actions and investments.	_____	☐	☐	☐	☐	☐
Other aspects of leadership *(Please list below if applicable.)*						
4.8.6	_____	☐	☐	☐	☐	☐
4.8.7	_____	☐	☐	☐	☐	☐

5. Do you have any additional observations about the link between **PLANNING** and **PROGRAMMING** not captured in the questions above?

6. Finally, could we contact you for follow-up or clarification of any response in this survey, if necessary?

☐ Yes ☐ No

NCHRP Project 8-50

Factors that Support the Planning-Programming Link

Stakeholder Survey: Regional Planning and Development Agencies

Introduction

Federal regulations require that our transportation investments in the short term – contained in Transportation Improvement Programs (STIPs and TIPs) – should be drawn from Long-Range Transportation Plans (LRPs), both at the state and the metropolitan levels. While this requirement dates from the 1960s, the strength of the **planning-programming linkage** varies and is influenced by a wide array of factors.

The purpose of the NCHRP 8-50 project is to identify **ways to further strengthen the link between planning and programming**. The survey questions below are intended to identify:

- ***Which factors are most important*** in creating and maintaining a strong link between long-range plans and the projects that get programmed and implemented; and

- The extent to which these factors are ***present in the planning and programming process in your agency.***

The factors identified in the survey have been gathered from interviews with planners, capital programming managers and transportation researchers and analysts. Your survey responses will be used in two ways: 1) to ***identify factors that may need added emphasis*** in strengthening the planning-programming linkage; and 2) to ***identify states and regions that may represent useful case studies*** on how to assure a strong linkage between planning and programming.

Survey Content

Part 1 Agency Information and Preliminary Questions *(1 page)*

Part 2 Aspects of your Agency's Planning and Programming Process *(2 pages)*

Part 3 Opinions about Broad Factors Influencing Planning and Programming Linkage *(1 page)*

Part 4 Opinions about Specific Factors Influencing Planning and Programming Linkage *(6 pages)*

Survey responses will be compiled by Cambridge Systematics, Inc. as the Principal Investigator on the project, and shared with the NCHRP Project 8-50 Panel. Specific responses will not be attributed to individual respondents.

You may complete this survey in electronic format and e-mail it to:

amuszynska@camsys.com

Alternatively, if you prefer to complete this survey in hard copy, please mail or fax your completed response to:

Ms. Agnes Muszynska
Cambridge Systematics, Inc.
4445 Willard Avenue, Suite 300
Chevy Chase, MD 20815
(301) 347-0100 t
(301) 347-1010 f

Part 1. Agency Contact Information and Preliminary Questions

Agency Name: _____

Agency Address: _____

Street

_____

City State Zip Code

Respondent Name: _____ Title: _____

Role in Planning and Programming: _____

Respondent Telephone: _____ E-mail: _____

Responding Agency Type

☐ State DOT

☐ Transit agency

☐ Metropolitan Planning Organization (MPO)

☐ Regional planning/development agency

Preliminary Questions

1.1 Transportation investments are most effective when there is a clear, direct link between **LONG-RANGE PLANS** and **PROJECTS PROGRAMMED IN THE TIP OR STIP**. *(Please check one box.)*

Strongly Agree	*Somewhat Agree*	*Neutral*	*Somewhat Disagree*	*Strongly Disagree*
☐	☐	☐	☐	☐

1.2 In my region, **THE LINKAGE** between **LONG-RANGE PLANS** and **PROGRAMMED PROJECTS** is… *(Please check one box.)*

Consistently Strong and Clear	*Sometimes Evident*	*Neutral*	*Often Weak and/or Unclear*	*Largely Nonexistent*
☐	☐	☐	☐	☐

1.3 In my region, the **PROGRAMMING** process is carried out … *(Please check one box.)*

With a direct link to the Long-Range Plan (LRP)	*With some linkage to the Long-Range Plan (LRP)*	*Neutral*	*Largely independent of the Long-Range Plan (LRP)*	*Independent of the Long-Range Plan (LRP)*
☐	☐	☐	☐	☐

Part 2. Describe Your Agency Practices and Perspectives

2.1 How are the **PLANNING** and **PROGRAMMING** functions organized in your agency? What unit is responsible for project selection?

2.2 Does your agency's **Long-Range Plan (LRP)** include specific projects, or is it a "policy document"? Does the **LRP** need to be amended frequently in response to programming decisions?

2.3 To what degree does your agency choose projects for the **TIP** based on measures and/or criteria contained in the **LRP**?

2.4 To what degree do projects programmed in the **TIP** tie back to your agency's **LRP**?

2.5 What role(s) do state DOT district or division engineers/planners have in **PLANNING** or **PROGRAMMING**?

2.6 What effect do changes in project cost and schedule have on your **PROGRAM**? When **PROGRAM** changes are necessary, what role does the **LRP** play in amending the **PROGRAM**?

2.7 Do you believe that changes in your **LONG-RANGE PLANNING** process/plan can improve **INVESTMENT/ PROGRAMMING** decisions? What changes are most needed?

2.8 Does your organization use performance measures in **PLAN DEVELOPMENT**? In prioritization and **PROGRAMMING**? Are factors other than measures of system condition and performance used in prioritization and programming?

Part 3. Broad Factors Influencing the Planning-Programming Link

The linkage between **Long-Range Plans** and projects programmed in the **TIP** is influenced by several broad sets of factors.

Please rank the importance of each of the following factors in supporting a direct, clear **LINKAGE** between **LONG-RANGE PLANS** and **PROGRAMS**. (If two or more factors are of equal importance, rank them the same.)

Broad Factor/Characteristic	Ranking (1 = Most Important)	Comments (if any)
3.1 Comprehensive and clearly stated Long-Range Plan goals, objectives and measures.	_____	
3.2 State-of-the-art data quality and analysis techniques.	_____	
3.3 Planning and programming functions are closely tied in the organizational structure.	_____	
3.4 Thorough, open communications *(internal and external)* throughout the planning and programming process.	_____	
3.5 External influences *(non-transportation)* are well understood and addressed openly and effectively.	_____	
3.6 Political and professional leaders are knowledgeable about and committed to a thorough and objective planning and programming process.	_____	
3.7 Planning and programming "cultures" work in synch.	_____	
Other factors affecting the planning and programming link. *(Please list below if applicable.)*		
3.8	_____	
3.9	_____	

Part 4. Specific Factors Influencing the Planning-Programming Link

The following statements represent **MORE SPECIFIC CHARACTERISTICS** or **FACTORS** that may contribute to a strong link between **Long-Range Plans** and **TIPs**. ***TWO RESPONSES ARE REQUESTED FOR EACH***.

4A) **PLEASE RANK THE GENERAL IMPORTANCE OF EACH** factor in strengthening the planning-programming link. *(Within each independent section, please rank the component factors with 1 = Most Important. If two factors are of equal importance, they can receive the same number ranking.)*

4B) **IN YOUR OWN AGENCY**, are these characteristics **CLEARLY EVIDENT**? *(Please select 1,2, 3, 4, or 5.)*

Plan Structure and Content *(Goals, Objectives, Measures and Allocation Factors)*	**4A)** **Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** **1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.1.1 The Long-Range Plan (LRP) contains specific policy guidance for investment decisions.	_____	☐	☐	☐	☐	☐
4.1.2 The LRP contains a short-range element to focus programming decisions and respond to changing circumstances.	_____	☐	☐	☐	☐	☐
4.1.3 The LRP contains performance measures tied to plan goals that define needs and measure progress.	_____	☐	☐	☐	☐	☐
4.1.4 A clear link exists between broader policy themes, LRP goals and priority-setting processes.	_____	☐	☐	☐	☐	☐
4.1.5 Performance measures are based on goal-oriented "outcomes" *(e.g., mobility, access, economy, environment, safety, etc.)* rather than on program "outputs" *(e.g., miles of improvement, contracts let, etc.).*	_____	☐	☐	☐	☐	☐
4.1.6 Funding allocation factors are based on performance measures reflecting plan goals and objectives.	_____	☐	☐	☐	☐	☐
Other important aspects of plan content and structure. *(Please list below if applicable.)*						
4.1.7	_____	☐	☐	☐	☐	☐
4.1.8	_____	☐	☐	☐	☐	☐

Analytical Approaches in Planning and Programming	**4A)** **Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** **1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.2.1 Technical/analytical justifications are strong; sound analytical tools are available to assess tradeoffs in resource use and project prioritization.	_____	☐	☐	☐	☐	☐
4.2.2 Assessments of needs *(performance and condition)* are done before funds are allocated.	_____	☐	☐	☐	☐	☐
4.2.3 There are clear procedures for setting project priorities among major types of investments *(e.g., preservation, operational improvements, expansion projects).*	_____	☐	☐	☐	☐	☐
4.2.4 Target levels for preservation can vary based on facility characteristics across the network.	_____	☐	☐	☐	☐	☐
Other important analytical aspects or approaches *(Please list below if applicable.)*						
4.2.5	_____	☐	☐	☐	☐	☐
4.2.6	_____	☐	☐	☐	☐	☐

Planning and Programming Processes	**4A)**	**4B) This factor drives programming decisions in my agency…**				
	Ranking (1 = Most Important)	**1 Always**	**2 Frequently**	**3 Half the Time**	**4 Rarely**	**5 Never**
4.3.1 Steps and procedures in the planning and programming process are well-defined, including the role of data, technical analysis.	_____	☐	☐	☐	☐	☐
4.3.2 TIP programming is based on a full understanding of a policy framework, the planning process and its products.	_____	☐	☐	☐	☐	☐
4.3.3 The planning and programming process allows flexibility to meet local conditions and circumstances.	_____	☐	☐	☐	☐	☐
4.3.4 The consequences and outcomes of programmed investments are regularly monitored and progress is reported against goals, targets.	_____	☐	☐	☐	☐	☐
4.3.5 Financial constraints required in programming projects do not limit the scope of the Long-Range Plan.	_____	☐	☐	☐	☐	☐
Other important aspects of process. *(Please list below if applicable.)*						
4.3.6	_____	☐	☐	☐	☐	☐
4.3.7	_____	☐	☐	☐	☐	☐

Organizational Structure	4A) Ranking (1 = Most Important)	4B) This factor drives programming decisions in my agency… 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.4.1 Planning and programming functions are closely linked in your organizational structure.	_____	☐	☐	☐	☐	☐
4.4.2 Programming is done by the planning function/unit *(rather than the financial/budget unit of the organization).*	_____	☐	☐	☐	☐	☐
Other important organizational aspects of organizational structure. *(Please list below if applicable.)*						
4.4.3	_____	☐	☐	☐	☐	☐
4.4.4	_____	☐	☐	☐	☐	☐

Organizational Culture	4A) Ranking (1 = Most Important)	4B) This factor drives programming decisions in my agency… 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.5.1 Elected and career public officials and their respective agencies support a shared "future" transportation vision.	_____	☐	☐	☐	☐	☐
4.5.2 All implementing agencies support the shared vision and goals.	_____	☐	☐	☐	☐	☐
4.5.3 Staff, policy-makers and stake-holders focus more on policy outcomes than individual projects as a basis for programming.	_____	☐	☐	☐	☐	☐
Other aspects of organizational culture *(Please list below if applicable.)*						
4.5.4	_____	☐	☐	☐	☐	☐
4.5.5	_____	☐	☐	☐	☐	☐

External Influences	4A) Ranking (1 = Most Important)	4B) This factor drives programming decisions in my agency… 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.6.1 Coordination is strong between transportation plans and plans of other agencies, stakeholders.	_____	☐	☐	☐	☐	☐
4.6.2 Actions of outside agencies *(e.g., public works, zoning, economic development, budget/tax, developers, lenders, etc.),* reinforce transportation planning and programming decisions.	_____	☐	☐	☐	☐	☐
4.6.3 Some level of politically based decision-making is recognized as inevitable, appropriate and openly managed.	_____	☐	☐	☐	☐	☐
Other important external aspects *(Please list below if applicable.)*						
4.6.4	_____	☐	☐	☐	☐	☐
4.6.5	_____	☐	☐	☐	☐	☐

Communications	4A) Ranking (1 = Most Important)	4B) This factor drives programming decisions in my agency… 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.7.1 There is clear and open communication between organization units responsible for planning and programming.	_____	☐	☐	☐	☐	☐
4.7.2 Regular dialogue and feedback occurs between the DOT and stakeholders.	_____	☐	☐	☐	☐	☐
Other important aspects of communications *(Please list below if applicable.)*						
4.7.3	_____	☐	☐	☐	☐	☐
4.7.4	_____	☐	☐	☐	☐	☐

Leadership *(Political and Professional)*	**4A) Ranking (1 = Most Important)**	**4B) This factor drives programming decisions in my agency…** 1 Always	2 Frequently	3 Half the Time	4 Rarely	5 Never
4.8.1 Political leaders know and follow the process and mechanics of planning and programming transportation investments.	_____	☐	☐	☐	☐	☐
4.8.2 Agency staff achieves and maintains a high level of knowledge and skill in planning and programming functions.	_____	☐	☐	☐	☐	☐
4.8.3 Sustained support for the LRP scope and vision is provided by senior professional staff/leadership.	_____	☐	☐	☐	☐	☐
4.8.4 Political leaders are engaged throughout the planning and programming process.	_____	☐	☐	☐	☐	☐
4.8.5 Political leaders understand the benefits and value of specific transportation actions and investments.	_____	☐	☐	☐	☐	☐
Other aspects of leadership *(Please list below if applicable.)*						
4.8.6	_____	☐	☐	☐	☐	☐
4.8.7	_____	☐	☐	☐	☐	☐

5. Do you have any additional observations about the link between **PLANNING** and **PROGRAMMING** not captured in the questions above?

6. Finally, could we contact you for follow-up or clarification of any response in this survey, if necessary?

☐ Yes ☐ No

APPENDIX C

Detailed Survey Results

State DOT Survey Responses

Table C.1 Plan Structure and Content

Six Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
LRTP contains specific policy guidance for investment decisions…	14	13	7
LRTP contains a short-range element to focus programming decisions and respond to changing circumstances…	9	9	11
Clear link exists between broad policy themes, LRTP goals, and priorities	8	8	12
LRTP contains performance measures tied to plan goals	7	11	9
Performance measures are based on goal-oriented "outcomes"	6	10	10
Funding allocations are based on performance measures reflecting LRTP goals and objectives	5	8	12

Note: Total DOT responses = 20.

Comments

- Fourteen of 20 respondents considered specific policy guidance in the LRTP most important; thirteen indicated specific policy guidance was most often in evidence.
- A short-range LRTP element is ranked second most important…BUT…one of the least evident factors.
- Half or more of the respondents indicated that there is little or no evidence in their processes of five of the six Plan Structure and Content factors, including all those that address the use of performance measures.
- Factors for which there is little or no evidence in current practice largely reflect the experiences of states with small urban or rural character.

Table C.2 Analytical Approaches

Four Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Needs assessments are done ahead of fund allocation	15	16	4
There are clear procedures for setting priorities among major project types	13	14	6
Technical/analytical justifications are strong…	11	10	10
Target levels for preservation can vary among system elements	6	14	6

Note: Total DOT responses = 20.

Comments

- Respondents indicated that needs assessments ahead of fund allocation is the most important factor and is evident in 16 of 20 responses.
- Half the respondents indicated shortcomings in their technical/analytical justifications.
- Respondents indicated that the ability to set varying preservation targets is the least important factor, yet it is done in nearly two-thirds of the respondents' agencies.
- Shortcomings in analytics were generally shared across states with all development character.

Table C.3 Planning and Programming Processes

Five Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Programming is based on full understanding of a policy framework, role of data, and technical analysis	15	15	5
Planning and programming steps, procedures are well-defined…	13	16	4
Planning and programming are flexible to meet local needs	12	17	3
Progress against goals, targets are regularly monitored and reported	8	13	7
Program financial constraints do not limit LRTP scope	3	13	7

Note: Total DOT responses = 20.

Comments

- Respondents indicated that the most important process factors are:
  - A full understanding of a policy framework and the role of data/analysis;
  - Well-defined procedures; and
  - Flexibility to meet local needs.
- A high proportion – 65 to 85 percent – of the respondents indicated that these factors are currently evident in their agencies' processes.
- There is no appreciable difference between responses of states by type.
- Shortcomings in process predominantly reflect responses from states with a single UZA and states with small urban or rural character.

Table C.4 Organizational Structure

Two Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Planning and programming functions are closely linked in the organizational structure	14	17	3
Programming is done by the planning function/unit	4	14	6

Note: Total DOT responses = 20.

Comments

- Close organizational linkage is considered the more important of the two factors.
- A majority of respondents indicated strong evidence that planning and programming are linked closely in organizational structure.

Table C.5 Organizational Culture

Three Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Elected/career officials and agencies support a shared future transportation vision	10	11	9
Staff, policy-makers, stakeholders focus on policy outcomes more than individual projects	6	3	17
All implementing agencies support shared vision, goals	4	9	11

Note: Total DOT responses = 20.

Comments

- Half the respondents considered broad support of a shared vision the most important cultural factor:
  - Half indicated a shared vision is part of their cultures; and
  - Half indicated it is not.
- Seventeen of 20 respondents indicated that policy-makers are more focused on projects than "outcomes."
- Eleven of 20 respondents indicated little or no evidence that implementing agencies support a shared transportation vision or goals.
- No respondent indicated these factors are "Never" in evidence.
- Shortcomings in organizational culture are shared by all responding states.

Table C.6 External Influences

Three Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Coordination is strong between transportation plans and plans of other agencies, stakeholders	16	14	6
Some level of politically based decision-making is recognized as appropriate	5	14	6
Actions of outside agencies reinforce transportation plans, programming	3	6	14

Note: Total DOT responses = 20.

Comments

- Fourteen of 20 respondents indicated that plan coordination among all public agencies is important…AND…is broadly evident among respondents' agencies.
- Fourteen of 20 respondents indicated that there is little or no evidence that the actions of outside agencies support transportation plans and programs; i.e., support at the plan level, lack of support at the program level…
- No respondent indicated that any of these factors were "Never" in evidence.
- Shortcomings in supportive action by outside agencies are shared among all responding states.

Table C.7 Communications

Two Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Clear, open communications exists between units responsible for planning and programming	16	18	2
Regular dialogue and feedback occurs between the agency and stakeholders	8	17	3

Note: Total DOT responses = 20.

Comments

- Sixteen of 20 respondents indicated that clear and open internal communications is an important factor…AND…a greater number indicated it is in evidence in their agencies.
- Seventeen of 20 respondents indicated their agencies engage in regular dialogue and feedback with stakeholders.
- Responses were generally consistent across all states.
- No respondent indicated that either of these factors was "Never" in evidence.

Table C.8 Leadership

Five Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Senior professional leadership provides sustained support for the vision and LRTP	14	13	6
Agency staff maintains a high level of knowledge and skill in planning and programming	12	19	1
Political leaders know and follow the planning and programming process	10	7	13
Political leaders are engaged throughout the process	8	11	8
Political leaders understand the benefits of transportation investment	7	9	11

Note: Total DOT responses = 20.

Comments

- Respondents ranked senior staff leadership (14 of 20) and staff knowledge and skill (12 of 20) as the most important leadership factors.
- Nineteen of 20 respondents believe that staff knowledge and skill levels in their agencies are high.
- Half or more of the respondents indicated that appropriate leadership is not in evidence by political leaders:
  - Thirteen of 20 cited shortcomings in knowledge of the process and willingness to follow it; and
  - Eleven of 20 cited shortcomings in political leaders' understanding of transportation investment benefits.
- No respondents indicated that any of these factors were "Never" in evidence.
- The most severe problems in political leadership (factors rarely or never in evidence) predominantly reflect the experiences of states with small urban or rural character.

MPO and RPA Survey Responses

Table C.9 Plan Structure and Content

Six Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Clear link exists between broad policy themes, LRTP goals, and priorities	6 4 MPOs 2 RPA	5 4 MPOs 1 RPA	1 RPA
LRTP contains specific policy guidance for investment decisions…	5 3 MPOs 2 RPAs	5 4 MPOs 1 RPA	1 RPA
LRTP contains a short-range element to focus programming decisions and respond to changing circumstances…	3 2 MPOs 1 RPA	3 MPOs	3 1 MPO 2 RPAs
Performance measures are based on goal-oriented "outcomes"	2 1 MPO 1 RPA	3 MPOs	3 1 MPO 2 RPAs
LRTP contains performance measures tied to plan goals	1 MPO	3 MPOs	3 1 MPO 2 RPAs
Funding allocations are based on performance measures reflecting LRTP goals and objectives	1 RPA	3 MPOs	3 1 MPO 2 RPAs

Note: Total MPO and RPA responses = 6.

Comments

- Four of the six factors are not regularly in evidence in half the responding agencies:
  - Short-range plans elements; and
  - Three factors related to the use of performance measures.
- Six respondents are unanimous on the importance of "clear links between broad policy themes, plan goals, and priorities."
- Both responding RPAs indicated limited or no evidence in their current processes of four of the six plan structure and content factors.

Table C.10 Analytical Approaches

Four Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
There are clear procedures for setting priorities among major project types	6 4 MPOs 2 RPAs	5 4 MPOs 1 RPA	1 RPA
Needs assessments are done ahead of fund allocation	6 4 MPOs 2 RPAs	3 MPOs	3 1 MPO 2 RPAs
Target levels for preservation can vary among system elements	3 2 MPOs 1 RPA	5 4 MPOs 1 RPA	1 RPA
Technical/analytical justifications are strong…	2 MPOs	2 MPOs	4 2 MPOs 2 RPAs

Note: Total MPO and RPA responses = 6.

Comments

- All six respondents are unanimous on the importance of:
  - Clear procedures for setting priorities; and
  - Conducting needs assessments ahead of fund allocation (although half do not do it regularly).
- Five of six respondents can vary preservation targets among system elements.
- Half or more of the respondents indicated little or no evidence of:
  - Needs assessments ahead of fund allocation; and
  - Strong technical/analytical justifications for programs.
- Shortcomings in analytical capability were noted by both RPAs.

Table C.11 Planning and Programming Processes

Five Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Planning and programming steps, procedures are well-defined…	4 2 MPOs 2 RPAs	5 3 MPOs 2 RPAs	 1 MPO
Programming is based on full understanding of a policy framework, role of data, and technical analysis	4 MPOs	4 MPOs	 1 RPA
Progress against goals, targets are regularly monitored and reported	4 3 MPOs 1 RPA	4 3 MPOs 1 RPA	2 1 MPO 1 RPA
Planning and programming are flexible to meet local needs	4 2 MPOs 2 RPAs	3 MPOs	3 1 MPO 2 RPAs
Program financial constraints do not limit LRTP scope	2 1 MPO 1 RPA	3 2 MPOs 1 RPA	3 2 MPOs 1 RPA

Note: Total MPO and RPA responses = 6.

Comments

- Four of five process factors are of comparable importance to the majority of respondents.
- Three of six respondents indicated:
  - Significant issues with inflexibility/inability to meet local needs; and
  - Funding constraints in LRTP development.

Table C.12 Organizational Structure

Two Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Planning and programming functions are closely linked in the organizational structure	6 4 MPOs 2 RPAs	5 4 MPOs 1 RPA	 1 RPA
Programming is done by the planning function/unit	4 3 MPOs 1 RPA	4 3 MPOs 1 RPA	2 1 MPO 1 RPA

Note: Total MPO and RPA responses = 6.

Comments

- Six respondents are unanimous on the importance of close organizational links in planning and programming.
- MPO respondents indicated that close organizational links do exist in their agencies.
- Proximity of planning and programming in the organizational structure appears to be somewhat more important than having the programming function done in the planning unit.

Table C.13 Organizational Culture

Three Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Elected/career officials and agencies support a shared future transportation vision	5 3 MPOs 2 RPAs	4 3 MPOS 1 RPA	2 1 MPO 1 RPA
All implementing agencies support shared vision, goals	4 3 MPOs 1 RPA	3 MPOs	3 1 MPO 2 RPAs
Staff, policy-makers, stakeholders focus on policy outcomes more than individual projects	1 RPA	3 MPOs	3 1 MPO 2 RPAs

Note: Total MPO and RPA responses = 6.

Comments

- Respondents indicated that support for a shared transportation vision, among agencies and officials, is the most important cultural factor.
- Three of six respondents indicated little or no:
  - Support for shared vision among implementing agencies; and
  - Focus on "outcomes" in comparison to specific project interests and/or advocacy.

Table C.14 External Influences

Three Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Coordination is strong between transportation plans and plans of other agencies, stakeholders	4 3 MPOs 1 RPA	4 3 MPOs 1 RPA	2 1 MPO 1 RPA
Some level of politically based decision-making is recognized as appropriate	2 MPOs	4 3 MPOs 1 RPA	2 1 MPO 1 RPA
Actions of outside agencies reinforce transportation plans, programming	2 RPAs	3 2 MPOs 1 RPA	3 2 MPOs 1 RPA

Note: Total MPO and RPA responses = 6.

Comments

- Four of six respondents indicated:
  - Strong coordination of transportation plans and the plans of other agencies; and
  - Appropriate levels of political influence.
- Three of six respondents indicated a potential contradiction, noting that the actions of outside agencies do not always reinforce transportation plans and programs.

Table C.15 Communications

Two Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Clear, open communications exists between units responsible for planning and programming	5 4 MPOs 1 RPA	5 4 MPOs 1 RPA	1 RPA
Regular dialogue and feedback occurs between the agency and stakeholders	3 1 MPO 2 RPAs	4 3 MPOs 1 RPA	2 1 MPO 1 RPA

Note: Total MPO and RPA responses = 6.

Comments

- Five of six respondents ranked clear, open internal communications highest.
- MPO and RPA respondents both cited strong evidence of:
  - Clear, open internal communications; and
  - Regular dialogue and feedback with/from stakeholders.

Table C.16 Leadership

Five Factors	Importance (Ranked #1 or #2)	In Evidence ("Always" or "Frequently")	NOT in Evidence (Half the Time, Rarely, Never)
Agency staff maintains a high level of knowledge and skill in planning and programming	5 4 MPOs 1 RPA	6 4 MPOs 2 RPAs	
Senior professional leadership provides sustained support for the vision and LRTP	5 4 MPOs 1 RPA	5 4 MPOs 1 RPA	1 RPA
Political leaders understand the benefits of transportation investment	5 3 MPOs 2 RPAs	3 2 MPOs 1 RPA	3 2 MPOs 1 RPA
Political leaders know and follow the planning and programming process	5 3 MPOs 2 RPAs	2 1 MPO 1 RPA	4 3 MPOs 1 RPA
Political leaders are engaged throughout the process	4 3 MPOs 1 RPA	5 4 MPOs 1 RPA	1 RPA

Note: Total MPO and RPA responses = 6.

Comments

- Four of five leadership factors are considered to be of high importance by respondents.
- Half or more of the respondents indicated little or no evidence that:
  - Political leaders understand the benefits of transportation investment; and
  - Political leaders know and follow the planning and programming process.

APPENDIX D

Agency Interview Highlights

Colorado DOT and the Denver Regional Council of Governments

Kentucky Transportation Cabinet

Minnesota DOT and the Twin Cities Metropolitan Council

Missouri DOT

Oregon DOT

Vermont Agency of Transportation

Colorado DOT and the Denver Regional Council of Governments (DRCOG)

Senior officials of the Colorado Department of Transportation (CDOT) were interviewed in early March 2006. Table D.1 lists the CDOT personnel, their titles, and others interviewed as part of the project. Table D.2 provides facts on the state and the transportation system.

Table D.1. Colorado interviewees.

CDOT Interviewees	Title/Position
Thomas E. Norton	Executive Director, CDOT
Jennifer J. Finch	Director, Division of Transportation Development
Heather Copp	Chief Financial Officer, Office of Financial Management and Budget
Jennifer Webster	Director, Office of Policy and Government Relations
Ann Skinner	Regional and MPO Planning Unit Manager
Jeffery R. Kullman	Region 1 Transportation Director
4 Planning Staffers	Division of Transportation Development
3 Budget and Finance Staffers	Office of Financial Management and Budget

DRCOG Interviewee	Title/Position
George J. Scheuernstuhl	Director, Metro Vision Planning and Operations

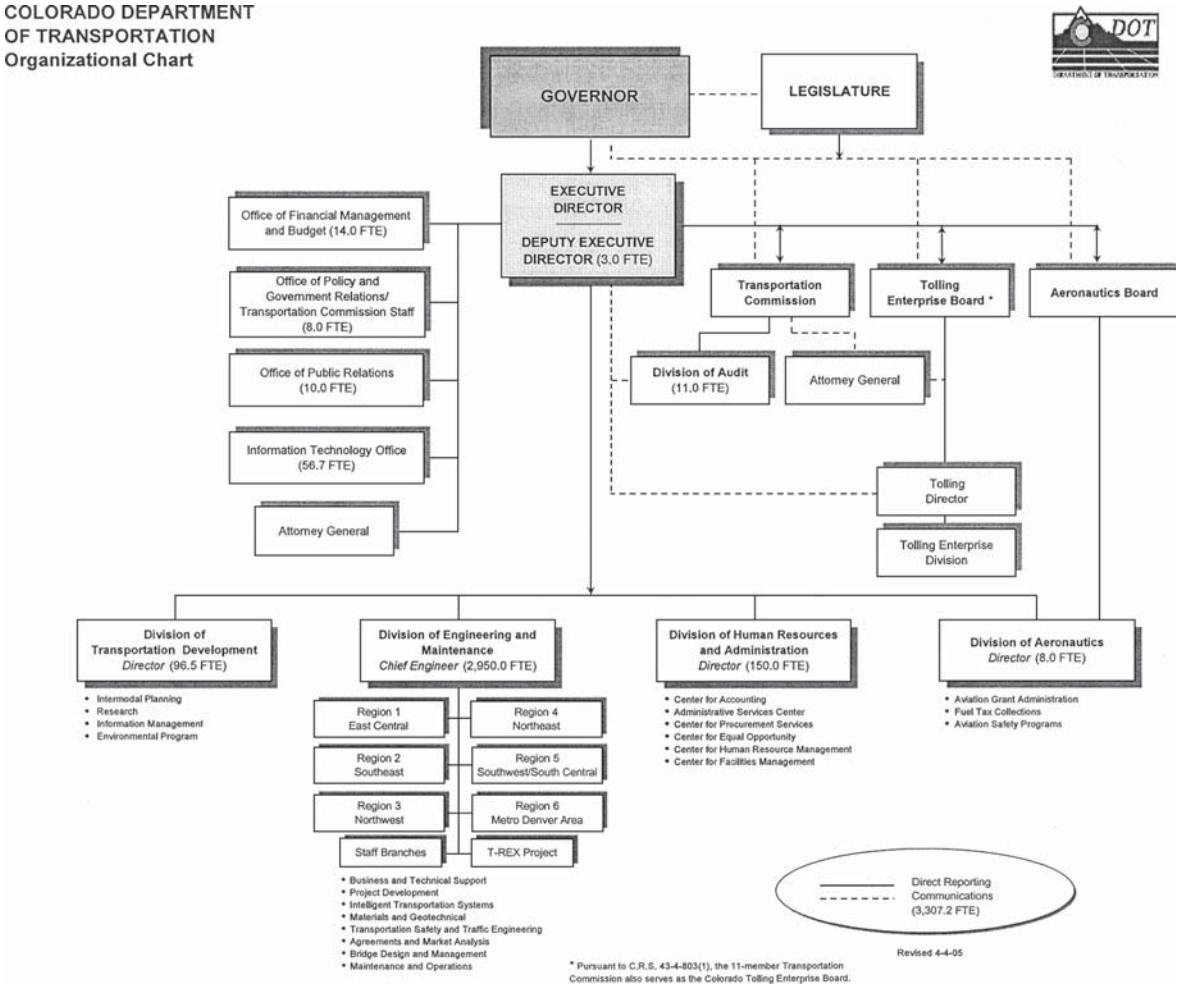
Efforts to schedule an interview with a state Transportation Commissioner from the Denver area were unsuccessful.

Table D.2. Characteristics of Colorado's surface transportation network.

Population *(2005 est.)*	
Statewide	4.7 million
Denver Region/MPO (9 counties)	2.6 million
Percentage of State	55.3%
Percentage Growth Since 1990	42%
4 smaller MPOs	
Licensed Drivers *(2004)*	3.3 million
Registered Vehicles *(2004)*	3.9 million
Street/Highway System *(miles)*	86,300 miles, 8,568 bridges
State system/responsibility *(2003)*	9,142 miles, 3,703 bridges
National Highway System (NHS)	3,580 miles
Interstate Highway System	956 miles
Transit Services	111 million trips annually, all services
Denver Metro Area	RTD (Bus, LRT, DR) – 86 million trips/yr (77%)
Greater Colorado	Est. 60+ miscellaneous providers

Source: Colorado Transportation Facts: 2005 Fact Book; 2030 Statewide Transportation Plan, *Highway Statistics 2004*, FHWA.

Figure D.1 illustrates the organizational structure of CDOT. Planning responsibility lies within the Division of Transportation Development. Programming responsibility lies within the Office of Financial Management and Budget.



Source: www.dot.state.co.us/TopContent/orgchartnew.pdf.
The org chart shown was in effect at the time of the interviews. It has since been revised as of August 22, 2006 by creating a fifth Division of Accounting and Finance from the former Office of Financial Management and Budget.

Figure D.1. Colorado Department of Transportation organization chart.

Table D.3 illustrates the direct relationship that is being developed between plan goals, categories of investment, program areas, and performance measures.

Table D.3. Framework for the Colorado 2030 Statewide Transportation Plan.

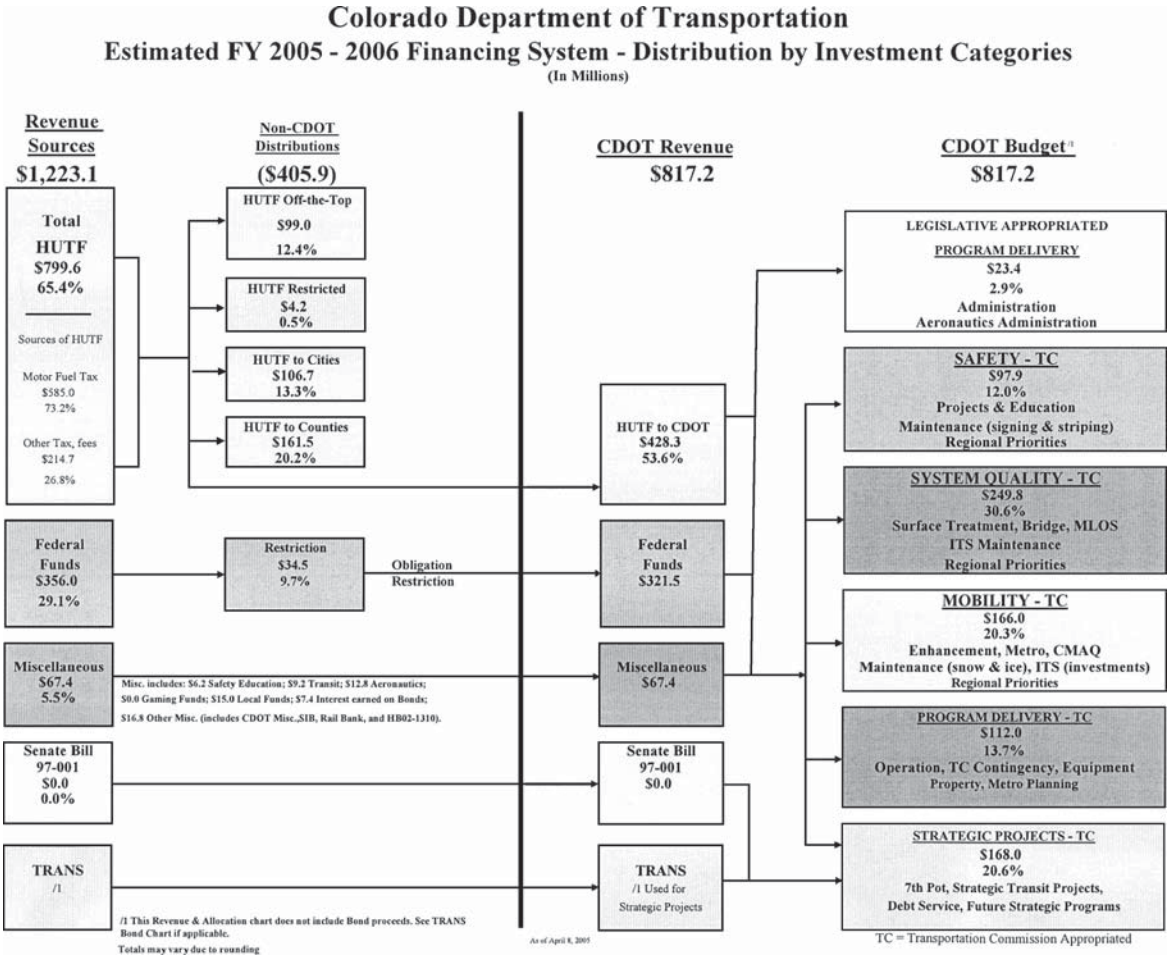
Investment Category	Goals	Program Areas	Performance Measures
Safety: ***Services programs and programs that reduce fatalities, injuries and property damage for all users of the system***	Reduce transportation-related crashes, injuries and fatalities and the associated loss to society	- Driver behavior *(alcohol, young drivers, seat belts, etc.)* - Roadway safety *(hazardous locations, run-off-the-road, sign replacement, etc.)*	- Crash rate - Fatality rate - Injury rate - Alcohol-related incident rate - Seat belt usage rate - Return on investment for designated improvement sites - Customer perception rating - Corridor safety assessment
System Quality: ***Activities, programs and projects that maintain the function and aesthetics of the existing transportation infrastructure***	- Preserve the transportation system - Keep the system available and safe for travel	- Pavement (includes reconstruction) - Bridge - Roadside facilities, appearance - Rest areas - Traffic ops facilities - Tunnels - Maintenance of other modes	- Surface condition rating *(fair or better)* - Bridge sufficiency rating *(fair or better)* - Maintenance condition survey
Mobility: ***Programs, services and projects that provide for the movement of people, goods and information***	- Improve mobility - Increase travel reliability	- Highway performance - Alternative mode performance - Facility management - TDM - Road closures - Corridor preservation	- VMT growth - V/C growth - Travel-time reliability *(customer perception)* - Percentage of travel needs met *(under development)*
Program Delivery: ***Support functions that enable the delivery of CDOT's programs and services***	- Deliver high-quality products and services in a timely fashion - Attract and retain an effective and qualified workforce - Foster an environment that respects workforce diversity	- Strategic support *(policy, planning, public relations)* - General support *(IS, financing, HR)* - Program support *(project development, design, const.)* - Property/equipment	

Source: 2030 Statewide Transportation Plan and accompanying documents.

Overall funding levels for three main program areas (Statewide Programs, Strategic Projects, and Regional Priorities Program) are established by the Transportation Commission in consultation with CDOT staff, starting from the prior year's allocations.

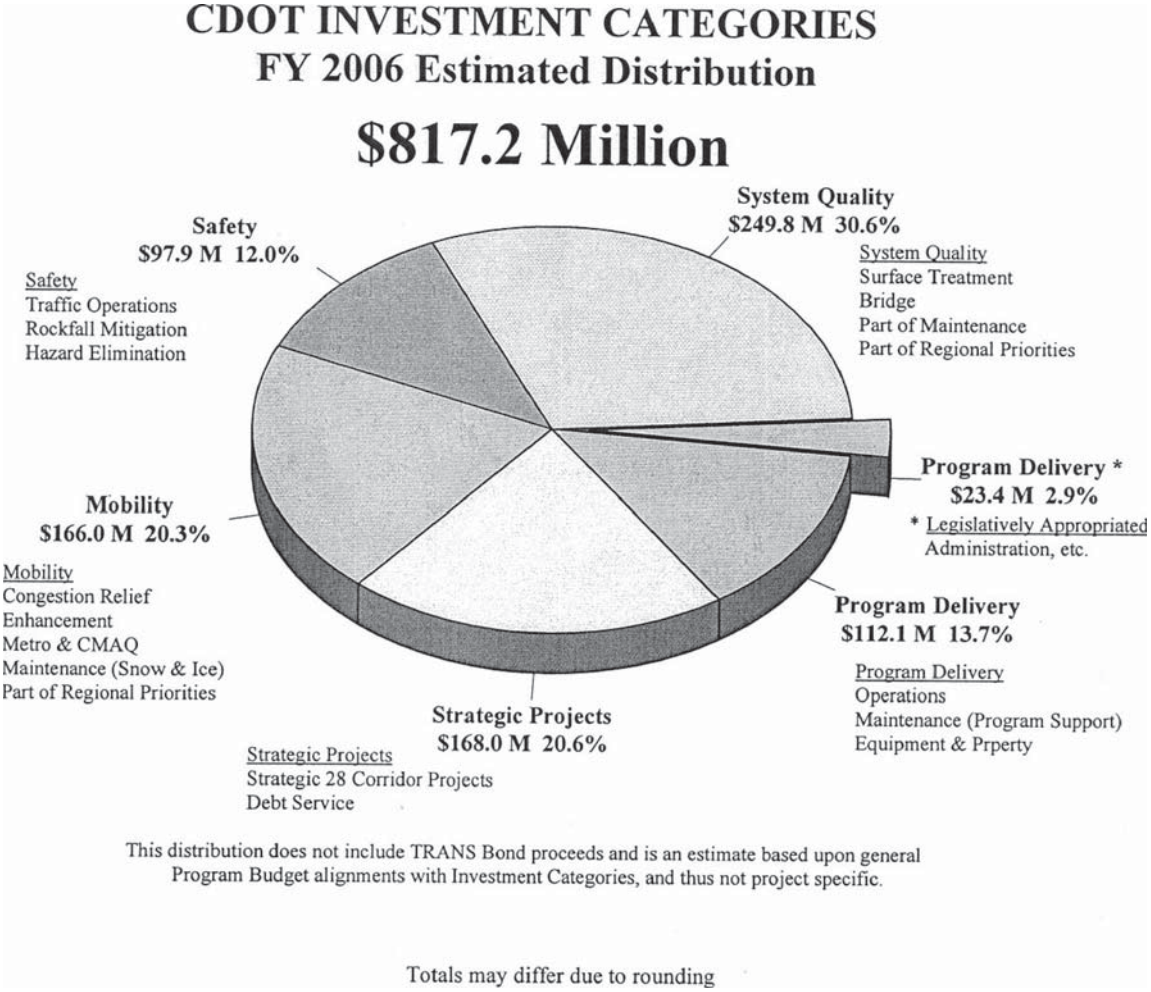
Funding for investment categories and program areas is based on a combination of performance-based needs analyses (Statewide Programs), pre-authorized project funding commitments, and schedules (Strategic Projects) and a formula (Regional Priorities Program) based on VMT (45%), lane miles (40%) and truck miles (15%).

Figure D.2 charts how funds flow from various sources to the investment categories and program areas. Figure D.3 illustrates allocation of FY 2006 funds to investment categories. Table D.4 summarizes detailed funding allocations.



Source: Colorado Department of Transportation Budget for Fiscal Year 2005-2006, April 21, 2005.

Figure D.2. CDOT funding flows.



Source: Colorado Department of Transportation Budget for Fiscal Year 2005-2006, April 21, 2005.

Figure D.3. FY 2006 estimated funding distribution by investment category.

Table D.4. Detailed budget allocation.

COLORADO DEPARTMENT OF TRANSPORTATION
ALLOCATION BY INVESTMENT CATEGORY
As of April 21, 2005

INVESTMENT CATEGORY PROGRAM AREAS (All or part)		ALLOCATION April
SAFETY		
Safety		12,773,142
Rockfall Mitigation		3,000,000
Rockfall Mitigation - Gaming Funds		0
Hazard Elimination		14,047,000
Hot Spots		2,100,000
Traffic Signals		1,427,000
Safety Enhancements		5,339,000
Maintenance (Traffic Operations)		59,256,223
Regional Priorities		0
Total SAFETY		**97,942,365**
SYSTEM QUALITY	* FY06 ST to do in FY05	
Surface Treatment *	42,401,957	100,684,043
CDOT Bridge & Special DI for Culvert Repair		32,892,000
Local Bridge		8,886,000
Maintenance		85,955,944
Rest Area		0
ITS Maintenance		3,737,000
Maintenance - Gaming Funds		0
Regional Priorities		17,690,400
Total System Quality		**249,845,387**
MOBILITY		
Congestion Relief		0
Enhancement		10,888,000
Metro		34,536,000
CMAQ		26,985,000
Maintenance (Avalanche, Snow & Ice)		42,227,142
ITS Investments		4,373,000
Gaming Construction		0
Division of Aeronautics - non Admin.		12,139,034
Transit		9,365,782
Regional Priorities		25,485,600
Total MOBILITY		**165,999,558**
STRATEGIC 28 PROJECTS		
7th Pot Projects		0
Debt Service		167,990,650
Total STRATEGIC PROJECTS		**167,990,650**
PROGRAM DELIVERY		
Operations		59,767,835
Maintenance (Program Support)		23,453,314
TC Contingency		24,661,243
Road Equipment		12,648,130
Capitalized Operating Equipment		3,534,403
Property		7,422,443
Metro Planning		3,921,276
Total PROGRAM DELIVERY		**135,408,644**
TOTAL CDOT INVESTMENT CATEGORIES		**$ 817,186,604**

Source: Colorado Department of Transportation Budget for Fiscal Year 2005-2006, April 21, 2005.

DRCOG Planning and Programming

Characteristics of the Denver metropolitan region and transportation system are highlighted in Table D.5.

Table D.5. Characteristics of the Denver metropolitan transportation network.

Population *(2002 est.)*	
Denver/MPO *(9 counties)*	2.6 million
Percentage of State	55.3%
Metro Highway System *(2005)*	
Regional Roadway System	6,211 miles
Freeways/Tollways	1,752
Major Regional Arterials	984
Principal Arterials	3,475
Park-n-Ride Spaces	21,900
Multimodal Corridors	35
Transit Services	
RTD (Bus, LRT, DR)	86 million trips annually
Small Urban and Rural Providers	4
Specialized Service Providers	35

Source: 2030 Metro Vision Regional Transportation Plan, DRCOG, 2005, www.rtd-denver.com.

DRCOG Plan and Program Structure and Content

The 2030 Metro Vision Regional Transportation Plan is a combination of policies, types of investments and specific projects organized around regional "strategic corridors." Major elements of the plan include six key principles:

1. Protect and enhance the region's quality of life;
2. Provide a long-range and regional focus;
3. Provide direction;
4. Respect local plans;
5. Encourage communities to work together; and
6. Remain dynamic and flexible.

Thirteen policy areas applied to 12 plan system elements have led to 65 strategies, as summarized in Table D.6. Six major categories of investment are shown in Table D.7.

Table D.6. DRCOG's policy and strategy framework.

System Element	Policies	Number of Strategies
Roadways	Expand capacity	4
	Preserve right-of-way	1
	Improve CBD access	1
	Improve intermodal connections	2
	Support land use and development policies	5
	Improve air quality; minimize water quality impacts	2
Rapid Transit	Increase services and facilities	1
	Improve CBD access	1
	Improve intermodal connections	4
	Support land use and development policies	1
	Improve services for the disadvantaged	1
	Improve air quality; minimize water quality impacts	1
Bus	Increase services and facilities	3
	Improve CBD access	1
	Improve intermodal connections	3
	Support land use and development policies	1
	Improve services for the disadvantaged	1
	Improve air quality; minimize water quality impacts	1
Pedestrian	Assure preservation and maintenance	1
	Provide access and links	1
	Improve intermodal connections	1
Bicycles	Provide access and links	1
	Improve intermodal connections	1
Multimodal Passenger Facilities	Improve intermodal connections	3
Freight	Expand roadway capacity	2
	Improve intermodal connections	2
System Management and Operations	Maximize use of existing facilities through improved operations	6
Transportation Demand Management	Reduce demand for single-occupant vehicle use	1
	Design accessible developments	1
System Preservation	Assure preservation and maintenance	3
Safety and Security	Promote increased safety and security	3
Funding	Increase available funds	5

Source: 2030 Metro Vision Regional Transportation Plan, January 2005.

Table D.7. DRCOG 2030 Plan expenditure categories.

Preservation and Maintenance
Regional Roadway System *(resurfacing, maintenance, major reconstruction, bridge)*
Off-street bike/pedestrian maintenance
Local street
Base Transit Service
RTD *(systems, facilities, fleet, bus/rail service, ADA service)*
Other services *(rural, elderly, and disabled)*
Management, Operations and Air Quality
Roadway operational, multimodal, RR grade separations
TDM, ITS, signals
Safety-specific improvements
TDM, DRCOG commuter services
Other CMAQ
Capital Improvements – Capacity Expansion
Regional roadway systems
New regional transit
Other
Debt Service
Aviation

Source: 2030 Metro Vision Regional Transportation Plan, January 2005.

The DRCOG 2007-2012 TIP is organized around project types and funding sources as shown in Table D.8, with target percentages for each funding source and project type.

Table D.8. DRCOG TIP project types, funding targets and sources.

STP-Metro	Metro Roadway Capacity Projects	61.6%
	Roadway Operational Improvements	16.4
	Roadway Reconstruction	18.8
	Studies	3.2
CMAQ	Transit capacity	63.8%
	Air Quality Improvement Projects	24.9
	Studies	11.0
	New Bus Service	0
	Transit Passenger Facilities	0
STP-Enhancement	Other Enhancement Projects (bike, ped, etc.)	100.0%

Project selection is done in two phases: (1) 75% of available funds are provided to highest ranking projects based on limits established for the project types; and (2) 25% of the available funds are provided based on other criteria (county-level funding equity, cost saving from merging projects, location in strategic corridors, construction readiness and very small communities).

Colorado Sources and References

- *Colorado Transportation Facts: 2005 "Fact Book,"* Colorado Department of Transportation, Denver, Colorado, 2005.
- "Action Plans: A Guide to CDOT's Action Planning Process" (PowerPoint presentation), Colorado Department of Transportation, Denver, Colorado, January 2006.
- Annual Report FY 2005, Colorado Department of Transportation, Denver, Colorado, 2005.
- "Budget Allocation Summaries by Program and by Investment Category," Colorado Department of Transportation, Denver, Colorado, 2005.
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- "Colorado Regional Transportation Planning Guidebook," Colorado Department of Transportation, Denver, Colorado, January 2, 2003.
- FY 2005 STIP, Colorado Department of Transportation, Denver, Colorado, March 13, 2006.
- Federal Highway Administration, Office of Asset Management, *Transportation Asset Management Case Studies: Data Integration – The Colorado Experience,* U.S. Department of Transportation, Washington, D.C., 2004.
- Moving Colorado – Vision for the Future: 2030 Statewide Transportation Plan, Colorado Department of Transportation, Denver, Colorado, February 2005:
  - Executive Summary;
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  - Corridor Visions;
  - Investment Strategy Technical Report;
  - State Highways Technical Report; and
  - Transit Technical Report.
- "Rules and Regulations for the Statewide Transportation Planning Process and Transportation Planning Regions," 2 CCR 604-1, Colorado State Legislature, 1997.
- "STIP Development and Amendment Guidelines," Colorado Department of Transportation, Denver, Colorado, August 12, 2003.
- "Transportation Commission Workshop: CDOT's Investment Strategy Framework" (PowerPoint presentation), Colorado Department of Transportation, Denver, Colorado, March 15, 2006.
- 2005-2010 Transportation Improvement Program, Denver Regional Council of Governments, Denver, Colorado, March 17, 2004.
- 2030 Metro Vision Regional Transportation Plan, Denver Regional Council of Governments, Denver, Colorado, January 2005.
- "Policy on Transportation Improvement Program (TIP) Preparation: Procedures for Preparing the 2007-2012 TIP," Denver Regional Council of Governments, Denver, Colorado, June 15, 2005.

Kentucky Transportation Cabinet

Senior officials of the Kentucky Transportation Cabinet (KYTC) were interviewed in late March 2006. Table D.9 lists the KYTC personnel and regional officials interviewed as part of the project.

Table D.9. Kentucky interviewees.

KYTC Interviewees	Title/Position
Marc D. Williams	Commissioner of Highways
Michael W. Hancock	Deputy State Highway Engineer Office of Program Planning and Management
Daryl J. Greer	Director, Division of Planning
Bruce Siria	Division of Planning
Nina Hamilton	Division of Planning
Charles Schaub	Division of Planning
Lynn J. Soporowski	Division of Planning, Engineering Branch Manager
Ronald B. Rigney	Director, Division of Program Management
Ivan Childers	Division of Program Management
Sherry Curry	Division of Program Management
Greg Meredith	Chief District Engineer, Bowling Green, KY
Debra Gabbard	Executive Director, Office of Budget and Fiscal Management
Taylor Manley	Office of Budget and Finance
Marcie Matthews	State Highway Engineer

Non-KYTC Interviewees	Title/Organization
Max Conyers	Transportation Director, Lexington Area MPO
Steve Miller	Executive Director, Buffalo Trace Area Development District
Jack F. Couch	Executive Director, Kentucky Council of Area Development Districts

Efforts to schedule an interview with Bart Harden, Senior State Legislative Staff, were unsuccessful.

Table D.10 highlights the extent and nature of the Kentucky highway and transit network.

Table D.10. Characteristics of Kentucky's surface transportation network.

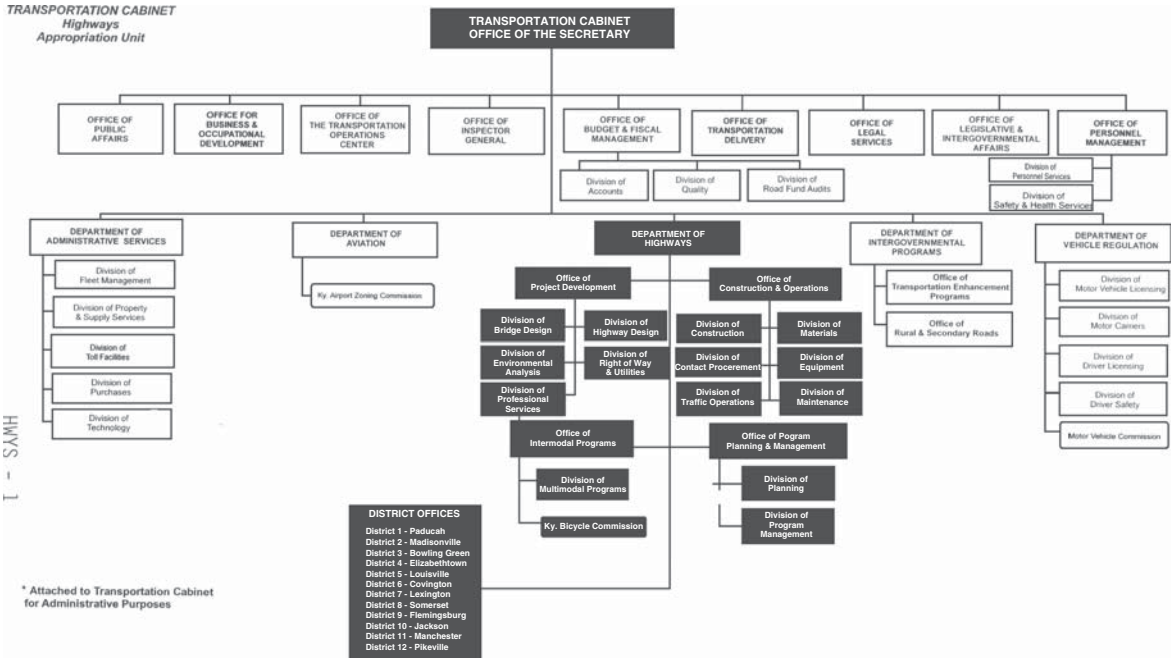
Population *(2005 est.)*	
Statewide	4.2 million
6 Urbanized Areas (over 50,000)	1.4 million
9 MPOs	
Percentage of State	34.0%
Licensed Drivers	1.4 million
Registered Vehicles	3.3 million
Street/Highway System *(miles)*	79,267 miles
State-owned	27,500
"Backbone System"	5,000
National Highway Systems (NHS)	2,870
Interstate Highways	762
Bridges (State-maintained)	13,500 (9,000)
Transit Systems	
Urbanized Area transit systems	8
Rural transit systems	21
Human service transportation regions	15

Source: U.S. Census, *Highway Statistics 2004*, Kentucky Statewide Transportation Plan, Draft 5, January 2006.

Figure D.4 illustrates the organizational structure of the Kentucky Transportation Cabinet and Figure D.5 illustrates the organizational structure of the Department of Highways.

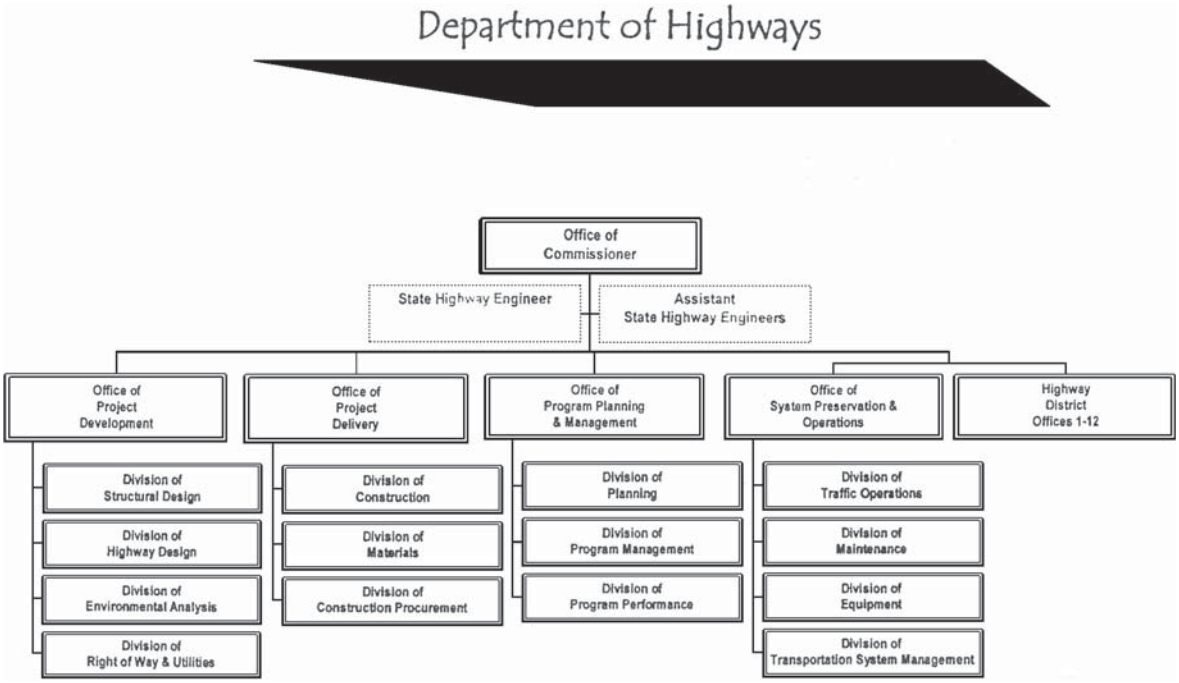
The Kentucky Statewide Transportation Plan, adopted in 2006, is now a policy-based document for the first time and contains an updated vision and the following goals:

- Safety and security;
- System preservation; and
- Economic opportunity and mobility.



Source: Provided by KTC staff.

Figure D.4. Organizational structure of the Kentucky Transportation Cabinet.



Source: Provided by KTC staff.

Figure D.5. Organizational structure of the Kentucky Department of Highways.

The Six-Year Highway Plan 2007-2012 is a combination of projects and funding "pools" and is the key document linking planning and programming. It is updated on a two-year cycle to link to the biennial state budget cycle. The Six-Year Highway Plan is structured around:

- Non-Six-Year "Fixed Cost" Budget Items, managed on a budgeted basis *(maintenance, resurfacing, debt service, State Police, revenue sharing, administration);*
- State Program (state-funded projects) (SP), managed on a cash basis; and
- Federal Program (federally funded projects), managed on a cash basis.

Expenditures within the Six-Year Plan (and the STIP) are structured around:

- Construction 53.9%
  (Including "Mega Projects" and "ZVarious" funding pools for small-scale, routine, quick-response activities)
- Maintenance 40.4%
- Operations 3.6%
- Engineering 1.5%
- Planning 0.4%
- Research 0.2%

The State Transportation Improvement Program (STIP) (2005-2007) is composed of priority projects in the first three years of the Six-Year Highway Plan. STIP projects are identified as a combination of improvement types by mode and by funding source:

1. Planned Highway Improvements;
2. Hazard Elimination – Safety (HES) Program Projects;
3. Intelligent Transportation Systems (ITS);
4. Transportation Enhancement Projects;
5. Transportation and Community and System Preservation Program (TCSP) Projects;
6. Planned Public Transportation (Transit) Projects;
7. Human Service Transportation Delivery;
8. Planned Aviation Improvements;
9. Maintenance and Traffic Operations; and
10. Recreational Trails.

Projects are presented in the following categories by county:

- Within non-MPO counties;
- Federally Funded ZVarious Projects;
- Air Quality Nonexempt State-Funded Projects;
- State-Funded ZVarious Projects;
- Public Transportation (Transit) Projects;
- Aviation Improvements; and
- Recreational Trails Program Projects.

Figure D.6 illustrates how funds flow to and through the KYTC program.

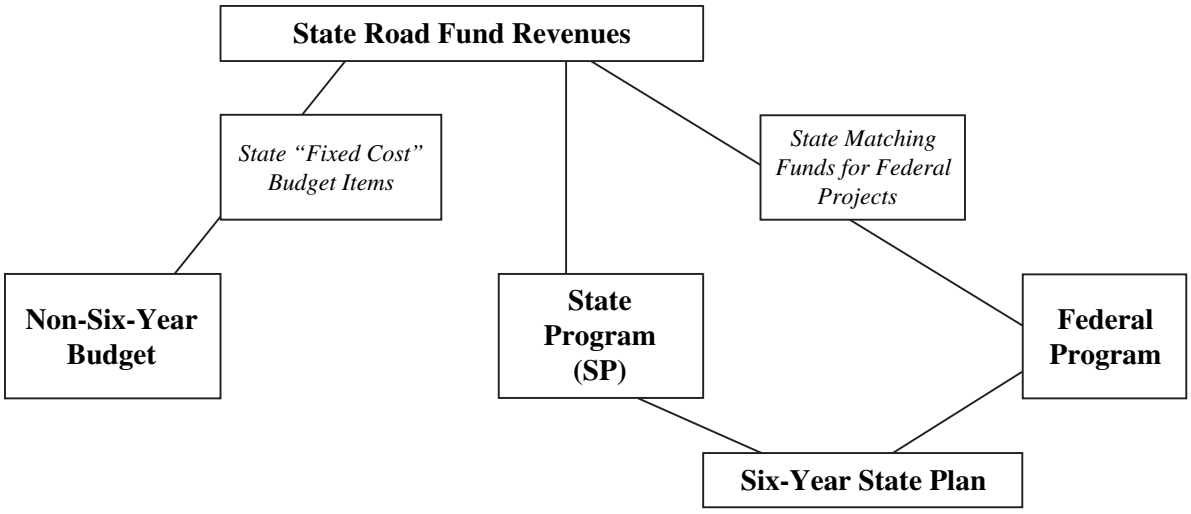


Figure D.6. Flow of funds to the Six-Year Highway Plan.

The evaluation process is "in its infancy." A point system is being tested and refined using ranges of values for varying performance or other variables within each goal area, including:

- Safety and Security
  - Critical Crash Rate Factor
  - Injury and Fatality Rates
  - Reliability
  - Road Classification
  - Traffic Flows
  - Truck Percentage
  - Pavement Rating
  - Bridge Condition
  - Access Control *(full, partial, by permit, none)*
- Economic Opportunity
  - KYTC Score
  - Economic Cabinet Score
  - Economic Development Score
- Local Project Support

Fund allocation within the Six-Year Highway Plan program areas includes:

- Maintenance (40.4%): Allocated to district offices based on year/historic levels
- Construction (53.9%): Variable
  - "Mega Projects": Federally funded; project activity-based allocations
  - "ZVarious": Historic levels; statewide allocation by need
  - "Revenue sharing": Statutory formulas to counties, cities, rural secondary roads

Kentucky Sources and References

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- Cash Management Spending Plan, Kentucky Transportation Cabinet, Frankfort, Kentucky, September 29, 2003.
- "Defining the Annual Letting Targets, Draft," Graphic highlighting the link between approved lettings, cash balances and decisions to authorize more lettings, July 20, 2005.
- "Financial Report to Management...for the Period of July 1, 2004 to June 30, 2005," Division of Accounts, Kentucky Transportation Cabinet, Frankfort, Kentucky, November 16, 2005.
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- Kentucky Statewide Transportation Plan: Draft 5, Kentucky Transportation Cabinet, Frankfort, Kentucky, January 2006.
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- Paths to Progress: Joint Strategic Plan for 2004-2008, Kentucky Transportation Cabinet and the Kentucky Division of the Federal Highway Administration, undated.
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- "Revised Pre-ART/ART Process, Draft," Graphic highlighting the Authorization Review Team process, undated.
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- Statewide Transportation Plan, Fiscal Year 1999-2018, Kentucky Transportation Cabinet, Frankfort, Kentucky, December 1999.
- "The Perfect Storm," Presentation by Debra Gabbard to the 2004 Southern Transportation Finance Conference, Ashville, North Carolina, May 17, 2004.

Minnesota DOT and the Twin Cities Metropolitan Council

Table D.11 lists the Minnesota DOT (Mn/DOT) and Metropolitan (Met) Council interviewees and their titles.

Table D.11. Minnesota interviewees.

Mn/DOT Interviewees	Title/Position
Douglas H. Differt	Deputy Commissioner
Kevin Z. Gray	Division Director, Finance and Administration and Chief Financial Officer
Scott R. Peterson	Director of Finance
Randall K. Halvorson	Division Director, Program Management
Allen J. Schenkelberg	Director, Office of Investment Management (OIM)
Tim Henkel	Manager, Transportation Programming
Peggy Reichert	Manager, Statewide Planning
Bill Gardner	Senior Planner, Office of Freight and Commercial Vehicle Operations
6 OIM staffers	
Donna W. Allen	Director, Public Transportation
Robert C. Winter	Division Director, District Operations
Met Council Interviewees	**Title/Position**
Natalio Diaz	Transportation Director
Carl Ohrn	Senior Transportation Planner

Table D.12 highlights characteristics of the state and its surface transportation network.

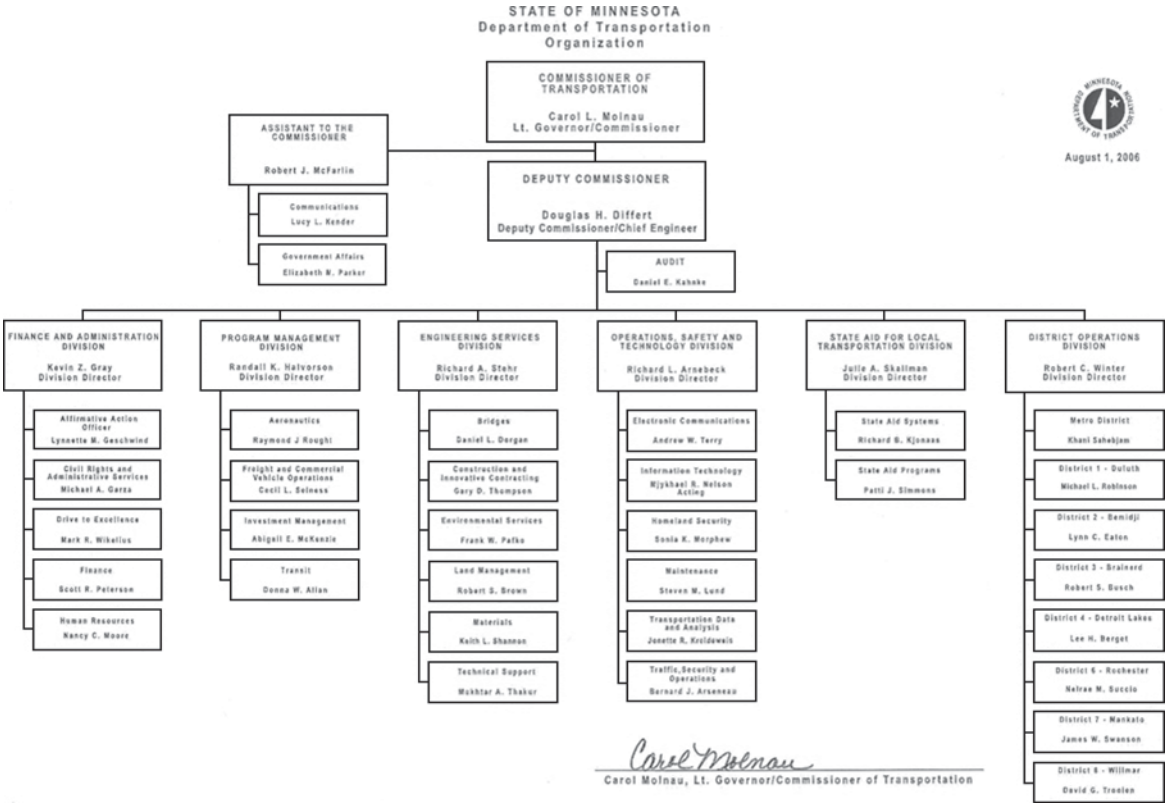
Table D.12. Characteristics of Minnesota's surface transportation network.

Population (2002 est.)	
Statewide	5,020,000
Twin Cities Metro/MPO (7 counties)	2,700,000
Percentage of State	53.8%
6 Smaller Urbanized Areas/MPOs	901,400
Percentage of State	18%
Licensed Drivers	3.65 million statewide
Registered Vehicles	4.2 million statewide
Street/Highway System *(miles)*	135,490 statewide
National Highway System (NHS)	3,967
State Trunk Highways (TH)	11,933 (4,668 bridges; 9% of miles; 61% of VMT)
Interregional Corridor System (IRC)*	5,565 miles (24% of TH miles; 43% of TH VMT)
Interregional Corridors	2,926
Regional Corridors	2,639
County and Local Roads	123,557
Transit Systems	
Twin Cities Metro Area	Metro Transit (Bus, LRT, DR)
	35 other Metro Area operators
Greater Minnesota *(other urban/rural)*	67 operators

* The IRC system is described further in chapters that follow.

Source: www.areaconnect.com/population.htm?s=MN; www.dot.state.mn.us/information/overview.html; www.metrocouncil.org/about/facts/TwinCitiesPopulationFacts.pdf; Minnesota State Transportation Plan, August 2003.

Figure D.7 highlights the Mn/DOT organizational structure as of January 2005.



Source: www.dot.state.mn.us/information/orgchart.html.

Figure D.7. Mn/DOT organizational structure.

The linkage between plan and program is documented in Table D.13, which indicates that performance measures are used for system preservation, operation improvements and capacity expansion on several levels ("decision contexts") from policy formulation to daily operations and reporting.

Table D.13. Performance measure applications.

Decision Process or Context	Type of Investment		
	System Preservation	Transportation System Management and Operation	Capacity Expansion
Policy Formulation and Analysis	Yes, Statewide, Metro & District Plans	Yes, Statewide Plan & Safety Plan	Yes, Statewide Plan
Planning, Network-Level Analysis	Yes, Statewide Plan	Yes	Yes, IRC System
Corridor and Project Analysis	Yes	Yes, Safety – High Crash Cost Locations	Yes, Corridor Studies
Programming and Budgeting	Yes	Yes, Fleet, Snow & Ice, Incident Clearance, Safety Projects, Striping, Signing	Yes
Tradeoff Analysis	Yes	Tradeoffs within Maintenance Budget	Yes. Identity deficient IRC corridors
Daily Operations	Yes- Proj Dev, Congestion, Snow & Ice	Yes	NA
External Reporting	Yes – Budget & Website: Pavement, Bridge,	Yes – Budget & Website: Snow & Ice, Incident Clearance, Congestion Real Time	Yes: Budget & Website: Congestion, IRC Travel Speed, Bus Shoulders

Source: Cambridge Systematics, Inc., "Performance Measures and Targets for Transportation Asset Management," NCHRP Project 20-60, Transportation Research Board, Washington, D.C., June 2004.

The 10 policies and their relation to the Strategic Directions are illustrated in Figure D.8.

Strategic Direction	Safeguard What Exists	Make the Network Operate Better	Make Mn/DOT Work Better
Plan Policies	1 – Preserve essential elements of existing transportation systems	4 – Provide cost-effective transportation options for people and freight	8 – Continually improve Mn/DOT's internal management and program delivery
	2 – Support land use decisions that preserve mobility and enhance the safety of transportation systems	5 – Enhance mobility in interregional transportation corridors linking regional trade centers	9 – Inform, involve and educate all effected stakeholders in transportation plans and investment decision processes
	3 – Effectively manage the operation of existing transportation systems to provide maximum service to customers	6 – Enhance mobility within major regional trade centers	10 – Protect the environment and respect community values
		7 – Increase the safety and security of transportation systems and their users	

Source: Minnesota Statewide Transportation Plan: Executive Summary, August 2003.

Figure D.8. Mn/DOT strategic directions and plan policies.

Table D.14 identifies the Mn/DOT STIP program structure.

Table D.14. Mn/DOT STIP program structure.

Program	Average Annual Funding *(2006-2008, millions)*
Highway Assistance Program	$889
Transit Assistance Program	134
Rail Service Assistance Program	4
Port Development Assistance Program	1
Airport Development Assistance Program	176
Total	**$ 1.2 billion**

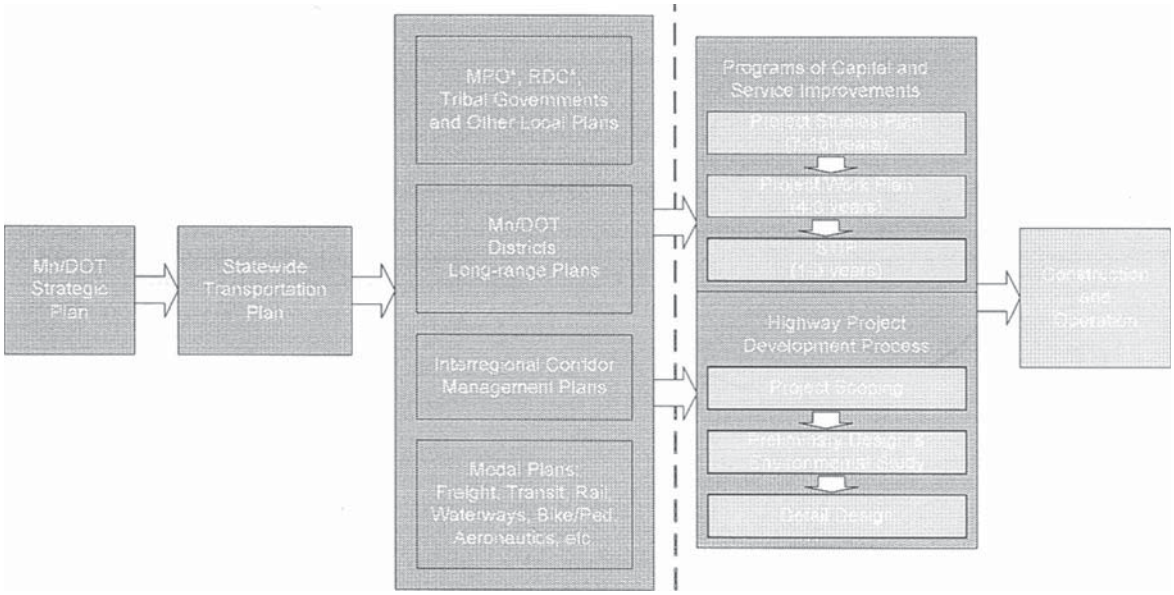
Source: State Transportation Improvement Program, 2006-2008, August 2005.

In addition, the STIP identifies individual projects in one of 33 "program categories" (activities), with funds programmed from any of 27 "funding categories."

Project selection and programming is done in two phases:

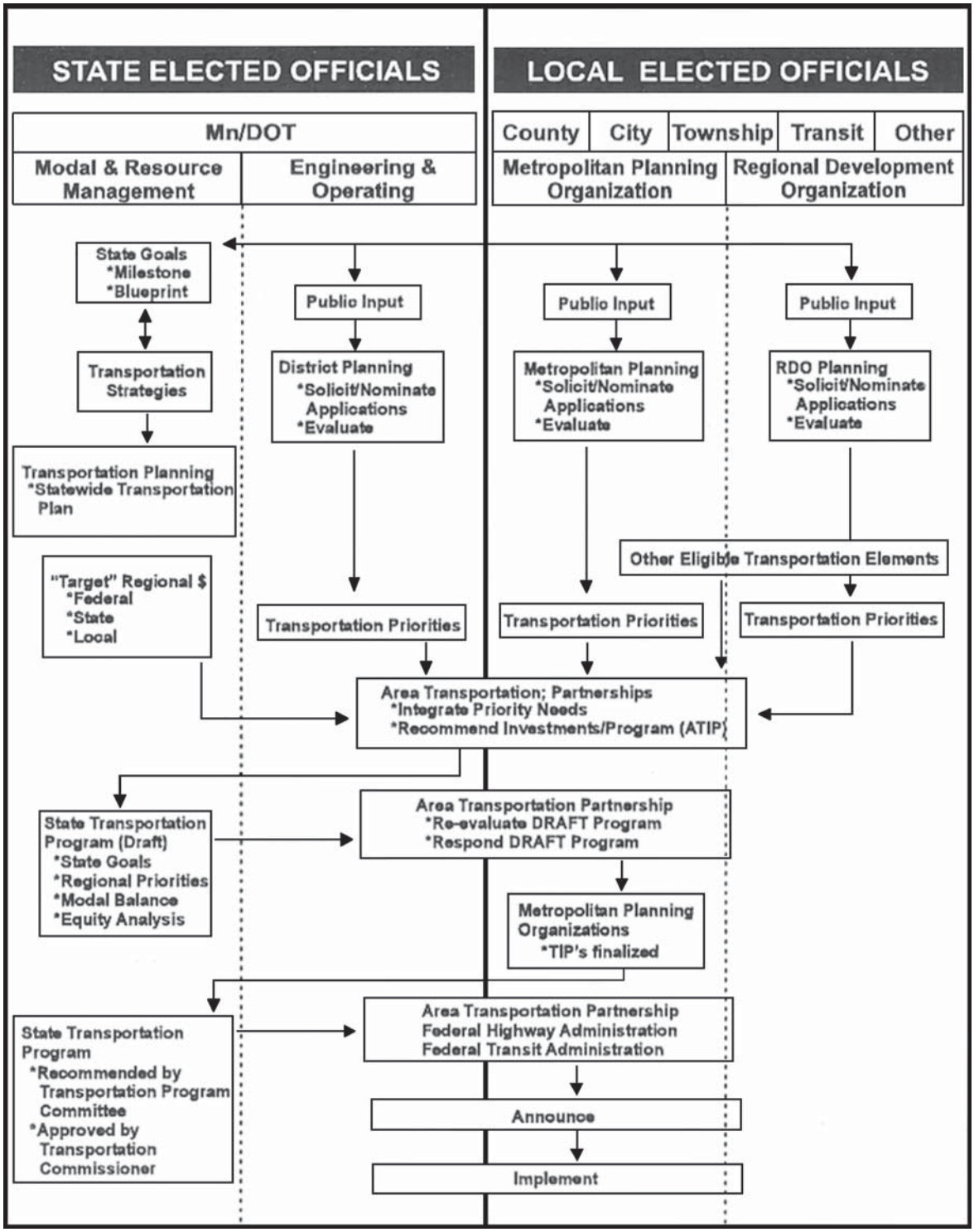
1. Drawing from projects listed in draft Area Transportation Improvement Programs (ATIPs), including preliminary identification of funding sources; and
2. Consolidating the ATIPs into the STIP and subsequent review by the districts and ATPs.

Figures D.9 and D.10 illustrate the linkage of Mn/DOT planning and programming processes and the sequence of activities on the state and local level.



Source: Cambridge Systematics, Inc., "Performance Measures and Targets for Transportation Asset Management," NCHRP Project 20-60, Transportation Research Board, Washington, D.C., June 2004.

Figure D.9. Relationship of transportation planning and programming.



Source: State Transportation Improvement Program, 2006-2008, August 2005.

Figure D.10. Transportation investment process.

Although planning, project selection and programming is performance-based, the allocation of funds to the Mn/DOT districts is not. Rather, funding allocations are based on a formula using factors, including system size and system use.

- The funding target formula is developed by the Office of Investment Management (OIM) through discussion with a Transportation Program Investment Committee (TPIC).
- In 2002, $1.3 billion in Mn/DOT revenues from fuel taxes, license fees, general funds and interest earnings were deposited in a Highway User Tax Distribution Fund. *(Source: Mn/DOT Funding Brochure for 2002)*
  - 5% is for "Special" purposes ($63.2 million):
    - Town Bridge Account (16%) apportioned to counties;
    - Town Road Account (30.5%) apportioned to counties; and
    - Flexible Highway Account – local (53.5%).
  - 95% is for "Regular Distribution" ($1.2 billion):
    - 62% – State Trunk Highway Fund;
    - 29% – County State Aid Highway (CSAH) Fund, apportioned to 87 counties based on vehicle registration (10%), CSAH lane miles (30%), CSAH needs (50%) and 'equalization' (10%):
      - 60% for CSAH construction; and
      - 40% for CSAH maintenance.
    - 9% – Municipal State Aid Highway Fund, apportioned to 130 municipalities based on population (50%) and needs (50%).
- Allocation of federal highway funds is made to Area Transportation Partnerships (ATPs)/Mn/DOT districts, and to a Central Fund for Major Mobility Projects to accommodate extraordinary needs and projects, largely in the Twin Cities. *(Source: Target Formula Re-Evaluation Material, August 2005):*
- ATP allocations are based on system size, system usage and performance-based factors:
  - 60% – Preservation (bridge, pavement, lane miles, VMT and heavy commercial VMT);
  - 10% – Safety (fatals, A-injuries); and
  - 30% – Mobility (VMT, congested VMT, buses, future population).
- The Central Fund is focused on the Interregional Corridor System (IRC) and new major bridge projects:
  - Biennial competitive project solicitation and selection; and
  - Central fund share capped at 50%.

Twin Cities Metropolitan Council

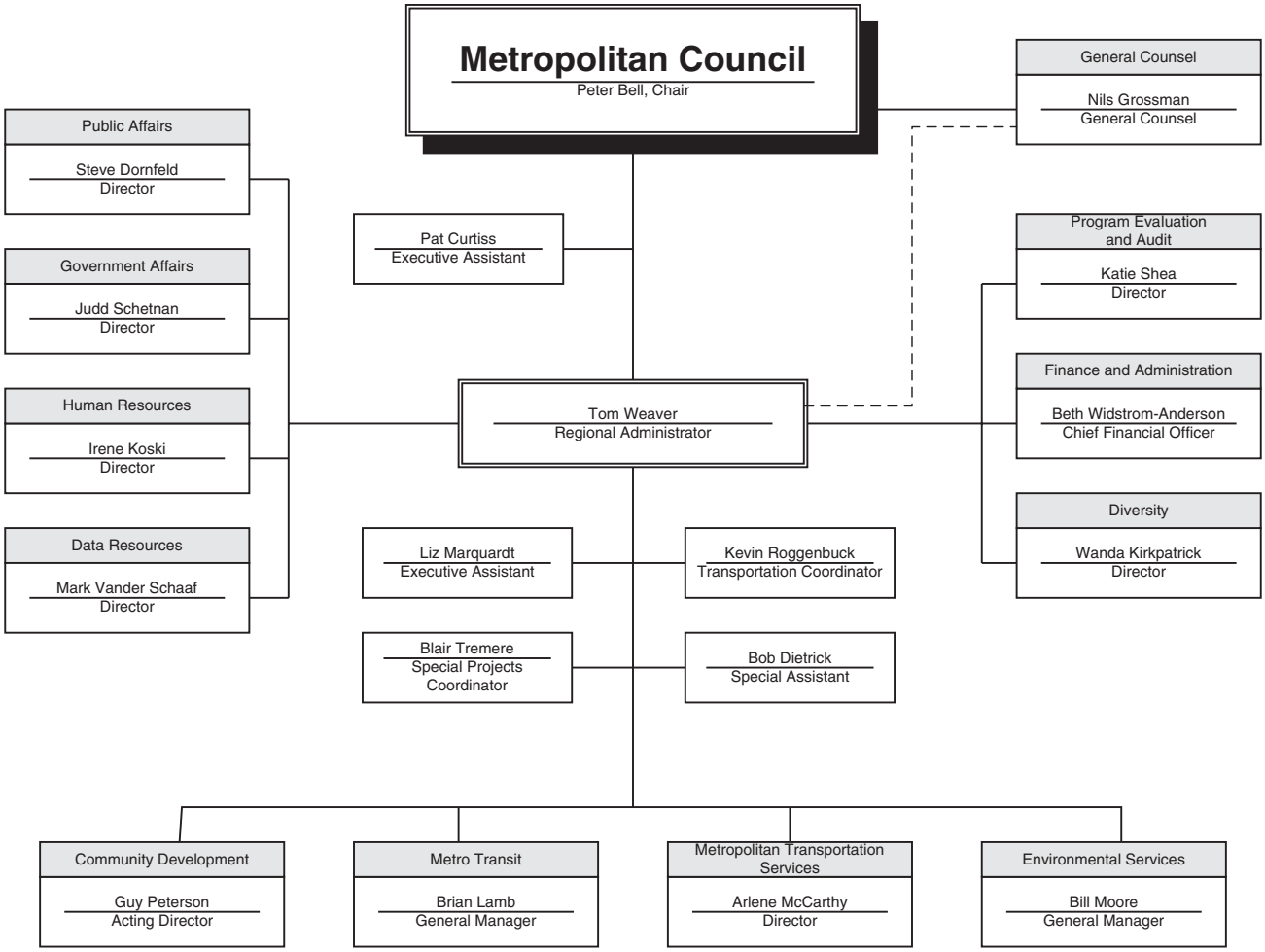
Characteristics of the metropolitan region and transportation system are highlighted in Table D.15.

Table D.15. Characteristics of the Twin Cities metropolitan transportation network.

Population (2002 est.)	
Twin Cities Metro/MPO (7 counties)	2,700,000
Percentage of State	53.8 %
Percentage Growth Since 1990	23.0 %
2 major CBDs	Minneapolis, St. Paul
Percentage auto trips	89%
Metro Highway System	
Principal Arterials	657 miles; 59% of VMT
"A" Minor Arterials	1,550 miles
Collector and local roads	11,600 miles
State Trunk Highways (TH)	1,110 miles *(including 657 miles of Pas)*
Transit Systems	
Metro transit bus	138 routes, 65 million yearly riders *(92% of reg'l. riders)*
Hiawatha LRT	12 miles
12 "Opt-Out" communities/bus systems	62 routes *(5% of reg'l. riders)*
4 separate community-run services	
8 communities in 2 transit consortia	
10 small suburban systems	
8 rural systems	
Other Facilities	
HOV	2 Metro Area corridors
Bus-only shoulder lanes	223 miles in Metro Area
Freeway ramp meter bus bypasses	88
Park-and-Ride with direct transit access	125

Source: 2030 Transportation Policy Plan, Metropolitan Council, 2004.

Figure D.11 highlights the organization structure of the Met Council, including four major business units supported by eight administrative units.



Source: www.metrocouncil.org/jobs/OrgChart.pdf.

Figure D.11. Metropolitan Council organizational structure.

Table D.16 presents a system of regional transportation benchmarks used in the Twin Cities as a part of the Met Council's Regional Development Framework.

Table D.16. Regional transportation benchmarks.

Benchmark	Indicator/Target
Highway Capacity	Lane miles of freeway *10 lane miles constructed per year*
Roadway Usage	Daily VMT per capita Less than .02% growth per year
Highway Congestion	Hours spent in congestion per capita per year *1% growth per year*
Air Quality	Maintain Federal Air Quality standards *Zero growth*
Transit Service	Vehicle revenue miles per year *3% growth per year*
Peak-Hour Transit Capacity	Peak-hour seat miles *3% growth per year*
Transit Ridership	Million riders per year *3% growth per year*
MSP Airport Runway Congestion	Average annual aircraft delay *3.2% growth*

Source: 2030 Transportation Policy Plan, December 2004.

Table D.17 highlights the Met Council's transportation policies.

Table D.17. Met Council Transportation Policy Plan policies. *(paraphrased, emphasis added).*

1	Regional transportation investments will be *coordinated with land use…*
2	The Met Council will actively pursue *adequate funding…*
3	Regional transportation *investments will be made based on need…*
4	*Public participation* will be promoted in all policy and implementing decisions…
5	Transit services will be *tailored to diverse market conditions…*
6	Efforts will be made to *increase the attractiveness of transit services…*
7	The Met Council will strongly pursue cost-effective *implementation of transitways…*
8	The Met Council will promote *competition and diversity in delivery of transit services…*
9	Transit services delivery will *comply fully with ADA requirements…*
10	*Travel demand management* techniques will be used to reduce peak-period trips…
11	Highway planning will focus on a *comprehensive, multimodal system…*
12	Implement the regional highway system in a cost-effective manner, with *priority to preservation, management, then expansion…*
13	Manage the regional system for *maximum safety and mobility…*
14	Maintain an effective and efficient *regional freight transportation system…*
15	Develop and maintain efficient *pedestrian and bicycle travel systems…*
16	*Preserve linear rights-of-way* for future public use…
17	Investment decisions and projects will be *consistent with all environmental standards,* regulations, plans and policies…
18	*Local comprehensive plans will be consistent* with The Transportation Policy Plan…

Source: 2030 Transportation Policy Plan, December 2004.

Table D.18 indicates the major investment categories in the Met Council's 2009-2030 Transportation Improvement Program (TIP). The evaluation and prioritization process involves: (a) screening based on "Qualifying Criteria" that focus on consistency with regional policy direction and procedures; and (b) scoring on a point system using criteria that directly tie to policies in the Transportation Policy Plan.

Table D.18. Met Council TIP program structure.

Program	Total Funding 2008-2030 *(million)*
TH Systemwide Life-Cycle Preservation	$2,244
TH Systemwide Management	1,320
TH Expansion Program	2,024
Transit Improvements	4,251
"Enhancements" (Federal STP funding takedown)	134
Congestion Management/Air Quality (CMAQ)	281
Set Asides	649
Selected Regional Projects	792
Total	**11,596**

Source: Metropolitan Council 2030 Transportation Policy Plan.

Minnesota Sources and References

- The Mn/DOT Strategic Plan (2003).
- The current Minnesota Statewide Transportation Plan: Moving People and Freight from 2003 to 2023 (2001, now being updated).
- Mn/DOT District Long-Range Plan Guidance (2004).
- 10-Year Highway Work Plan.
- The 2006-2008 State Transportation Improvement Program (STIP).
- STIP Guidance: Transportation Investment Process (2001).
- The Greater Minnesota Public Transportation Plan (2001).
- Minnesota Statewide Highway Systems Operations Plan (2005).
- A draft of a current long-range plan update from one of Mn/DOT's eight districts (Long-Range Transportation Plan – District 3: 2008-2030).
- The District Operations Performance Data Summary Report (2004).
- Target Formula Reevaluation Material (2005).
- Metropolitan Council, 2030 Transportation Policy Plan.
- Metropolitan Council, Prospectus for the Transportation Planning Process, Twin Cities Metropolitan Area.
- Metropolitan Council, 2005 Solicitation for Federal Transportation Project Funding.
- Metropolitan Council, Project Selection Process and Consistency Requirements with the Financial Resources.
- Metropolitan Council, 2002-2007 Capital Improvement Program and Capital Program and Budget.

Missouri Department of Transportation

Table D.19 lists the Missouri DOT (MoDOT) personnel and others interviewed as part of the project.

Table D.19. Missouri interviewees.

MoDOT Interviewees	Title/Position
Marge Schramm	Chairman, Missouri Highways and Transportation Commission
David Nichols	Director of Program Delivery
Michelle Watkins	Transportation Planning Director
Eric Kurdy	Supervisor, Long-Range Planning
Gary Thomas	Assistant District Engineer, District 5
Kirk Boyer	Resource Management Director
Derek Gregg	Financial Analyst
Robert (Ben) Reeser	Finance Coordinator

Non-MoDOT Interviewees	Title/Organization
Neil St. Onge	Member, Missouri House of Representatives; Chair, Joint Transportation Committee
Ron Achelpohl	Assistant Director of Transportation, Metro Area Regional Council (MARC), Kansas City MPO
Molly Gashell	Planner, MARC
Drew Buntin	Director of Government Affairs, Missouri Department of Natural Resources (DNR)
Jane Beason	Manager, Environmental Compliance, Missouri DNR

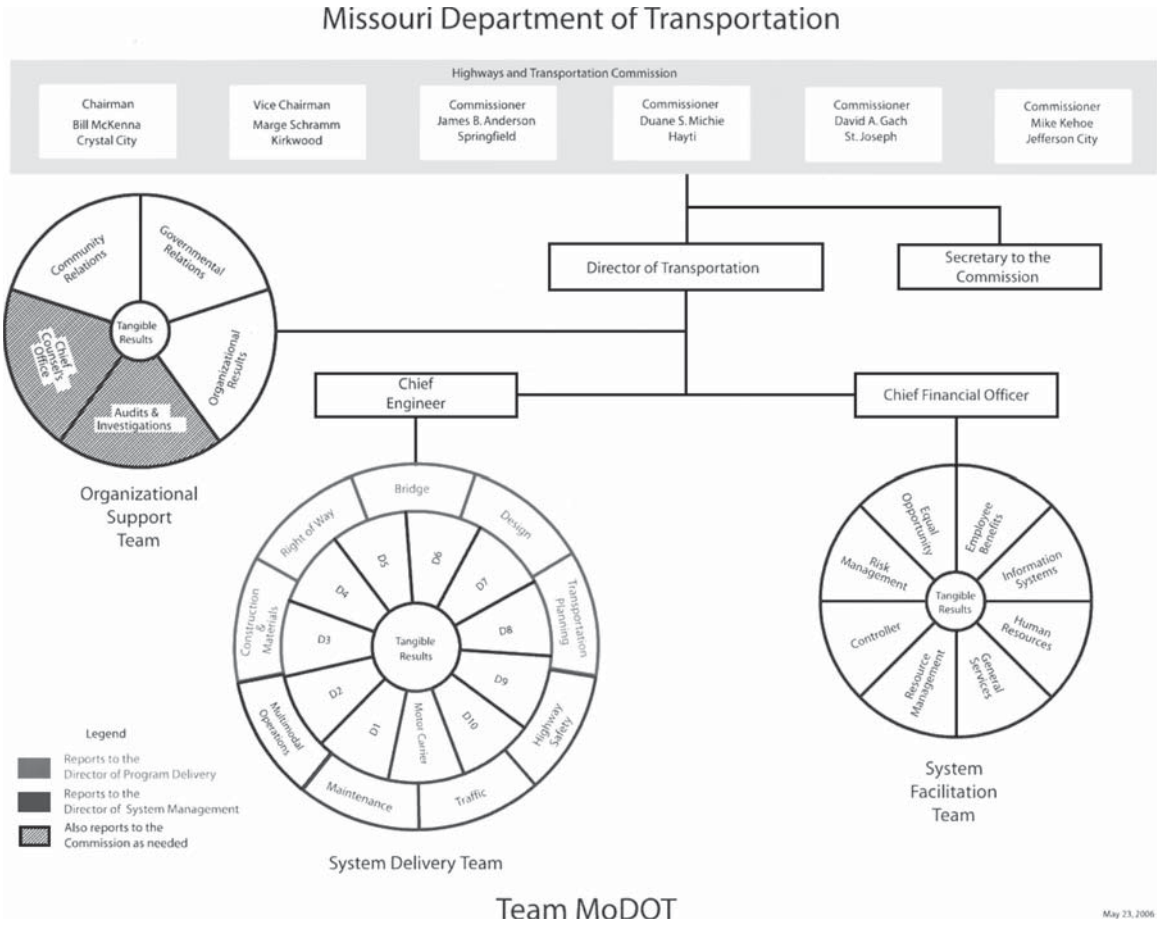
Table D.20 highlights the extent and nature of the Missouri highway and transit network.

Table D.20. Characteristics of Missouri's surface transportation network.

Population *(2005 est.)*	
Statewide	5.8 million
Percentage Growth Since 1990	13.3%
8 Urbanized Areas (over 50,000)	3.1 million
Licensed Drivers	4.0 million
Registered Vehicles	4.8 million
Street/Highway System *(miles)*	125,923 miles
Federal Aid Highways	30,359
State-owned	32,448
National Highway Systems (NHS)	4,457
Interstate Highways	1,181
Bridges	
State-maintained	10,183

Source: U.S. Census, *Highway Statistics 2004*.

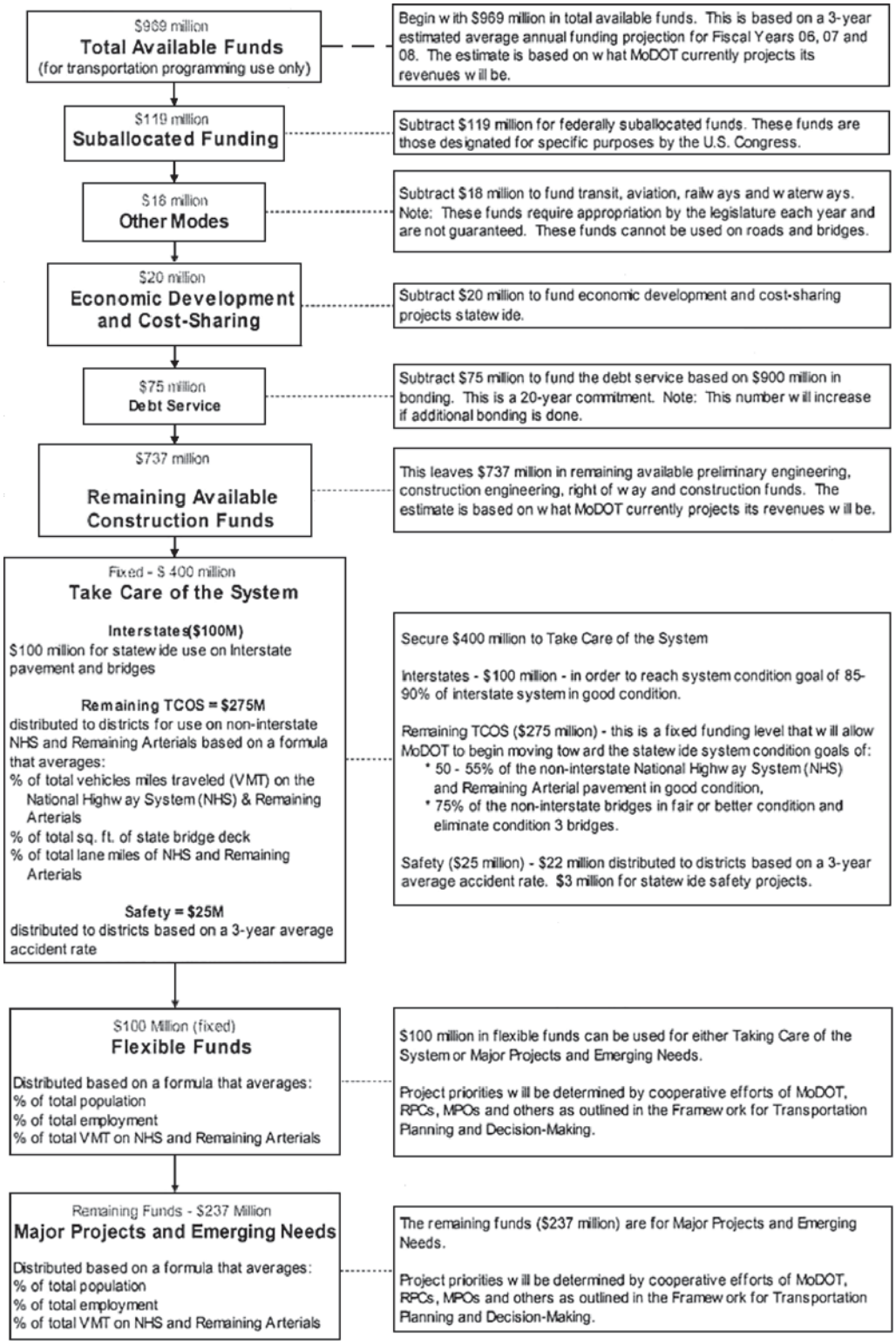
Figure D.12 illustrates the organizational structure of the Missouri Department of Transportation.



Source: www.modot.org/jobs/documents/MoDOTOrgChart.pdf.

Figure D.12. Organizational structure of the Missouri Department of Transportation.

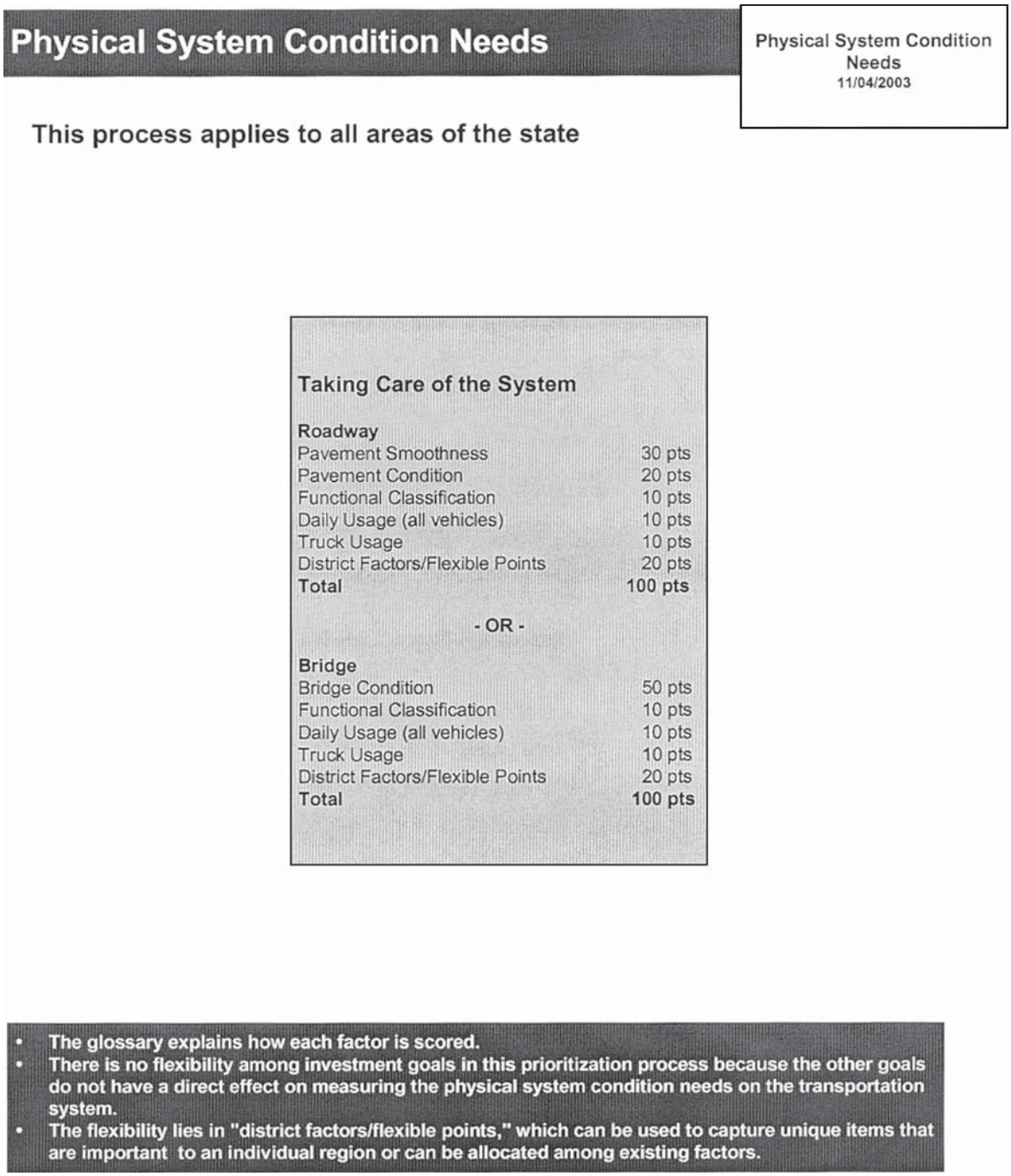
Figure D.13 illustrates MoDOT's transportation fund allocations.



Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.13. Missouri fund distribution.

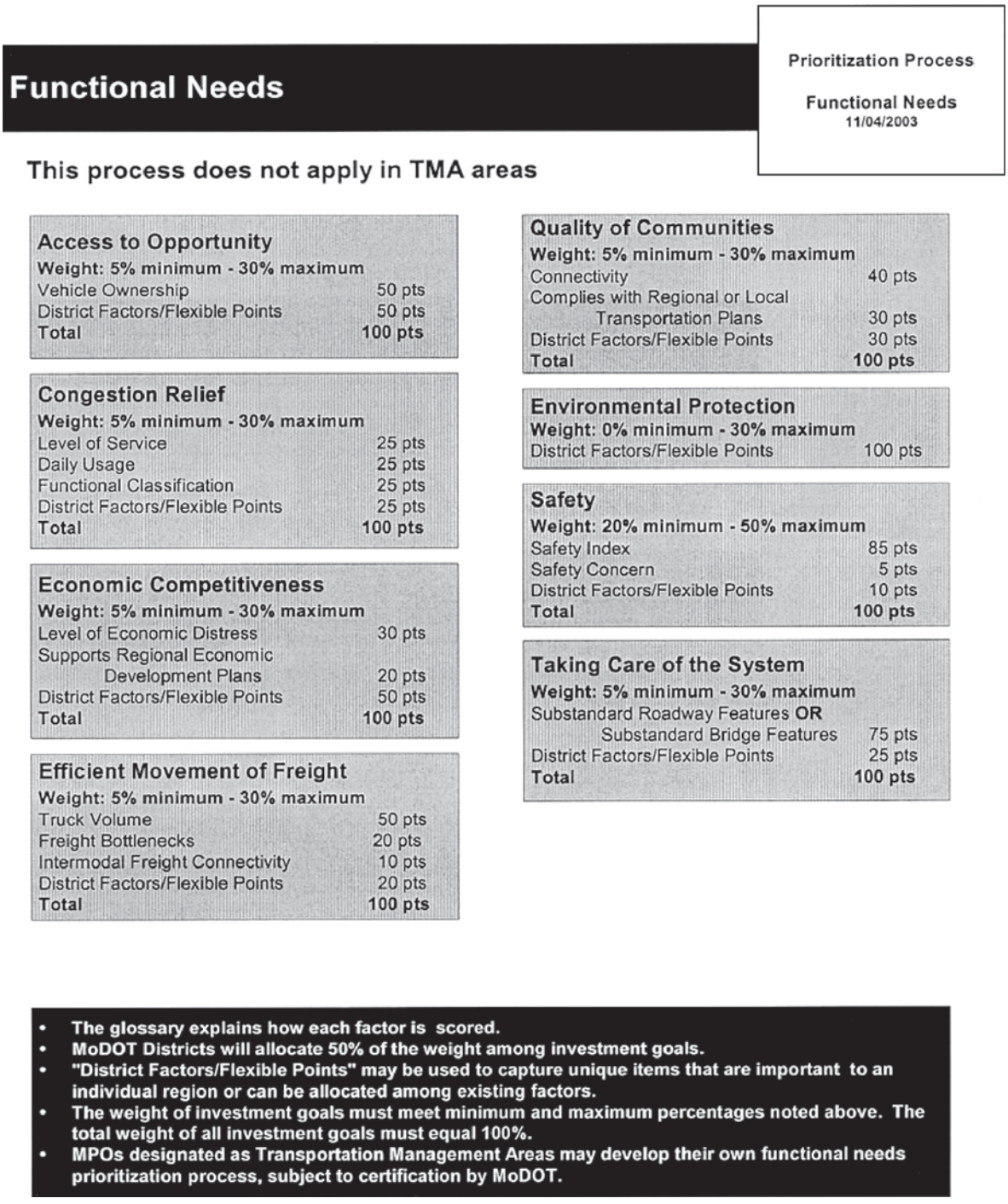
Figures D.14 shows the performance measures used to allocate funds in Missouri.



Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.14. Missouri performance measures.

Figures D.15 through D.19 show the measures and weights for the major goal areas in MoDOT's transportation planning framework.



Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.15. Missouri Functional Needs measures and weights.

Prioritization Process

Taking Care of the System

11/04/2003

Taking Care of the System Projects

This process applies to all areas of the state

Access to Opportunity

Weight: 0% minimum - 20% maximum

Eliminate Bike/Ped Barriers (ADA)	25 pts
Vehicle Ownership	25 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

Congestion Relief

Weight: 0% minimum - 20% maximum

Level of Service	75 pts
District Factors/Flexible Points	25 pts
Total	**100 pts**

Economic Competitiveness

Weight: 0% minimum - 20% maximum

Strategic Economic Corridor	30 pts
Level of Economic Distress	20 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

Efficient Movement of Freight

Weight: 0% minimum - 20% maximum

Truck Volume	90 pts
District Factors/Flexible Points	10 pts
Total	**100 pts**

Quality of Communities

Weight: 0% minimum - 20% maximum

District Factors/Flexible Points	100 pts
Total	**100 pts**

Environmental Protection

Weight: 0% minimum - 20% maximum

Environmental Index	50 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

Safety

Weight: 5% minimum - 25% maximum

Safety Index	70 pts
Safety Concern	10 pts
Safety Enhancements	10 pts
District Factors/Flexible Points	10 pts
Total	**100 pts**

Taking Care of the System

Weight: 75% minimum - 95% maximum

Roadway

Pavement Smoothness	30 pts
Pavement Condition	20 pts
Functional Classification	10 pts
Daily Usage (all vehicles)	10 pts
Truck Usage	10 pts
Substandard Roadway Features	10 pts
District Factors/Flexible Points	10 pts
Total	**100 pts**

- OR -

Bridge

Bridge Cndition	40 pts
Exceptional Bridge	10 pts
Functional Classification	10 pts
Daily Usage (all vehicles)	10 pts
Truck Usage	10 pts
Substandard Bridge Features	10 pts
District Factors/Flexible Points	10 pts
Total	**100 pts**

- **The glossary explains how each factor is scored.**
- **MoDOT Districts will allocate 20% of the weight among all investment goals.**
- **"District Factors/Flexible Points" may be used to capture unique items that are important to an individual region or can be allocated among existing factors.**
- **The weight of investment goals must meet minimum and maximum percentages noted above. The total weight of all investment goals must equal 100%.**

Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.16. Missouri Preservation measures and weights.

Safety Projects

Prioritization Process

Safety Projects
11/04/2003

This process applies to all areas of the state

Access to Opportunity
Weight: 0%

Congestion Relief
Weight: 10%

Daily Usage	90 pts
District Factors/Flexible Points	10 pts
Total	**100 pts**

Economic Competitiveness
Weight: 0%

Efficient Movement of Goods
Weight: 0%

Quality of Communities
Weight: 0%

Environmental Protection
Weight: 0%

Safety
Weight: 90%

Safety Index	40 pts
Accident Severity	25 pts
Accident Rate	20 pts
Safety Concern	5 pts
Safety Enhancements	5 pts
District Factors/Flexible Points	5 pts
Total	**100 pts**

Taking Care of the System
Weight: 0%

- The glossary explains how each factor is scored.
- Because this is a more data intensive process with a higher level of desired statewide consistency, the investment goals are fixed.
- There are "District Factors/Flexible Points" in this process to capture unique items that are important to an individual region; or these points may be allocated among existing factors.

Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.17. Missouri Safety measures and weights.

Prioritization Process

Regional and Emerging Needs Projects
11/04/2003

Regional and Emerging Needs Projects

This process does not apply in TMA areas

Access to Opportunity	
Weight: 5% minimum - 30% maximum	
Vehicle Ownership	25 pts
Eliminate Bike/Ped Barriers	25 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

Congestion Relief	
Weight: 5% minimum - 50% maximum	
Level of Service	20 pts
Daily Usage	20 pts
Functional Classification	20 pts
System Efficiency (w/o Expansion)	20 pts
District Factors/Flexible Points	20 pts
Total	**100 pts**

Economic Competitiveness	
Weight: 5% minimum - 30% maximum	
Supports a Strategic Economic Corridor	20 pts
Level of Economic Distress	20 pts
Supports Regional Economic Development Plans	20 pts
District Factors/Flexible Points	40 pts
Total	**100 pts**

Efficient Movement of Freight	
Weight: 5% minimum - 30% maximum	
Truck Volume	50 pts
Freight Bottlenecks	25 pts
District Factors/Flexible Points	25 pts
Total	**100 pts**

Quality of Communities	
Weight: 5% minimum - 30% maximum	
Complies with Local/Regional Land-Use Plans	25 pts
Connectivity	25 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

Environmental Protection	
Weight: 5% minimum - 30% maximum	
Environmental Index	50 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

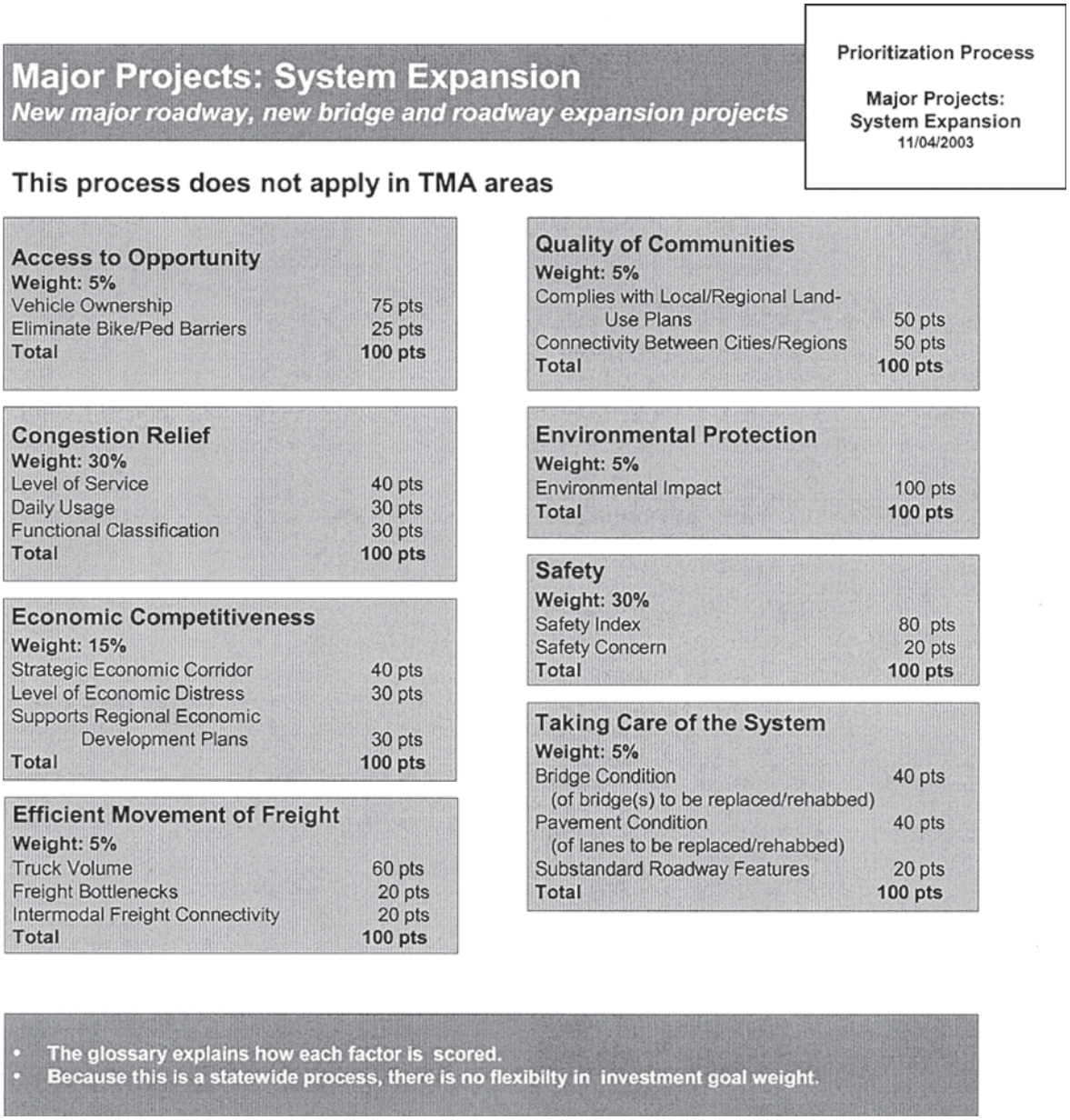
Safety	
Weight: 15% minimum - 40% maximum	
Safety Index	50 pts
Safety Concern	25 pts
District Factors/Flexible Points	25 pts
Total	**100 pts**

Taking Care of the System	
Weight: 5% minimum - 30% maximum	
Bridge Condition (of bridge to be replaced) **OR** Pavement Condition (of lanes to be replaced)	25 pts
Substandard Roadway **OR** Substandard Bridge Features	25 pts
District Factors/Flexible Points	50 pts
Total	**100 pts**

- **The glossary explains how each factor is scored.**
- **MoDOT Districts will allocate 50% of the weight among all investment goals. In addition, "District Factors/Flexible Points," maybe used to capture unique items that are important to an individual region or they may be allocated among existing factors.**
- **The weight of investment goals must meet minimum and maximum percentages noted above. The point values listed with each factor are recommendations and may be changed at the district's discretion.**
- **The total weight of all investment goals must equal 100%.**
- **MPOs designated as Transportation Management Areas may develop their own regional and emerging needs prioritization process, subject to certification by MoDOT.**

Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.18. Missouri Regional Needs measures and weights.



Source: Practitioner's Guide: Missouri's Framework for Transportation Planning and Decision-Making, March 2004.

Figure D.19. Missouri system expansion measures and weights.

Missouri Sources and References

- Practitioners Guide: Missouri's Framework for Transportation Planning and Decision-Making, Missouri Department of Transportation, March 2004.
- Missouri Department of Transportation – Funding Distribution – 2003, as adopted by the Missouri Highway and Transportation Commission, January 10, 2003.
- MoDOT's Long-Range Transportation Direction, Missouri Department of Transportation, October 2001.

Oregon Department of Transportation

Table D.21 lists the Oregon DOT (ODOT) personnel and others interviewed as part of the project.

Table D.21. Oregon interviewees.

ODOT Interviewees	Title/Position
Gail Achterman	Member, Oregon Transportation Commission
Lorna Youngs	Acting ODOT Director
Doug Tindall	Executive Deputy Director, Highway Division
Craig Greenleaf	Administrator, Transportation Development Division
Steve Leep	Program and Funding Services Manager
Daryl Ficker	Budget Officer
Jeff Scheik	Region Manager, Northwest Region
Michael T. Long	Region 2 Project Delivery Manager
Eric Haven	Region 2 Planning and Development Manager
Non-ODOT Interviewees	**Title/Organization**
Jonathan Young	Senior Transportation Planner, FHWA
Michelle Eraut	Environmental Protection Specialist, FHWA
Bob Cortright	Transportation Coordinator, Oregon Department of Land Conservation and Development
Ted Leyebold	MTIP Manager, Portland Metropolitan Service District

David Cox, FHWA Division Administrator, was not available to interview.

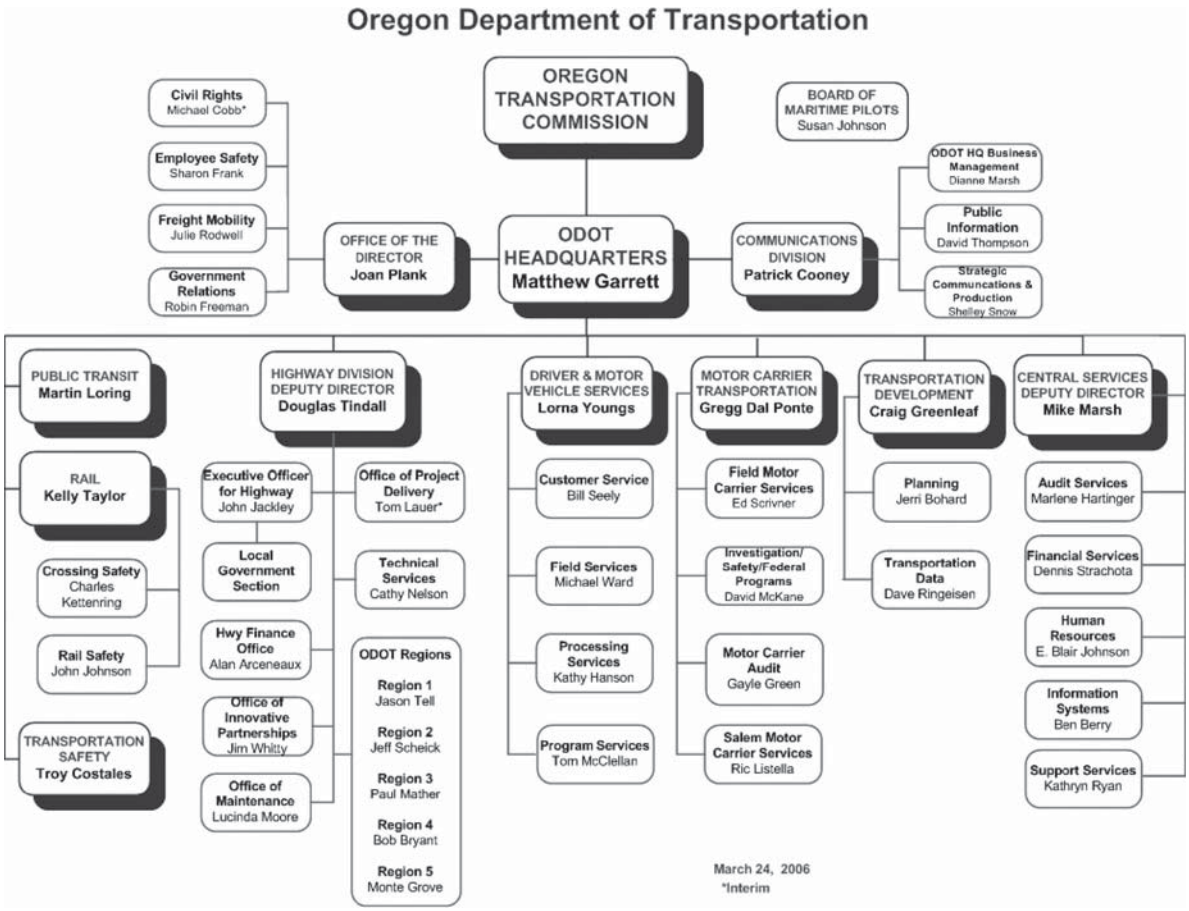
Table D.22 highlights the extent and nature of the Oregon highway and transit network.

Table D.22. Characteristics of Oregon's surface transportation network.

Population *(2005 est.)*	
Statewide	3.6 million
6 Urbanized Areas (over 50,000)	2.4 million
Licensed Drivers	2.96 million
Registered Vehicles	4.05 million
Street/Highway System *(miles)*	65,861 miles
Federal Aid Highways	17,988
State-owned	8,067
National Highway Systems (NHS)	3,751
Interstate Highways	728
Bridges (State-maintained)	6,640 (2,670)
Transit Systems	
Urbanized Area transit systems	6

Source: U.S. Census, FHWA *Highway Statistics 2004*.

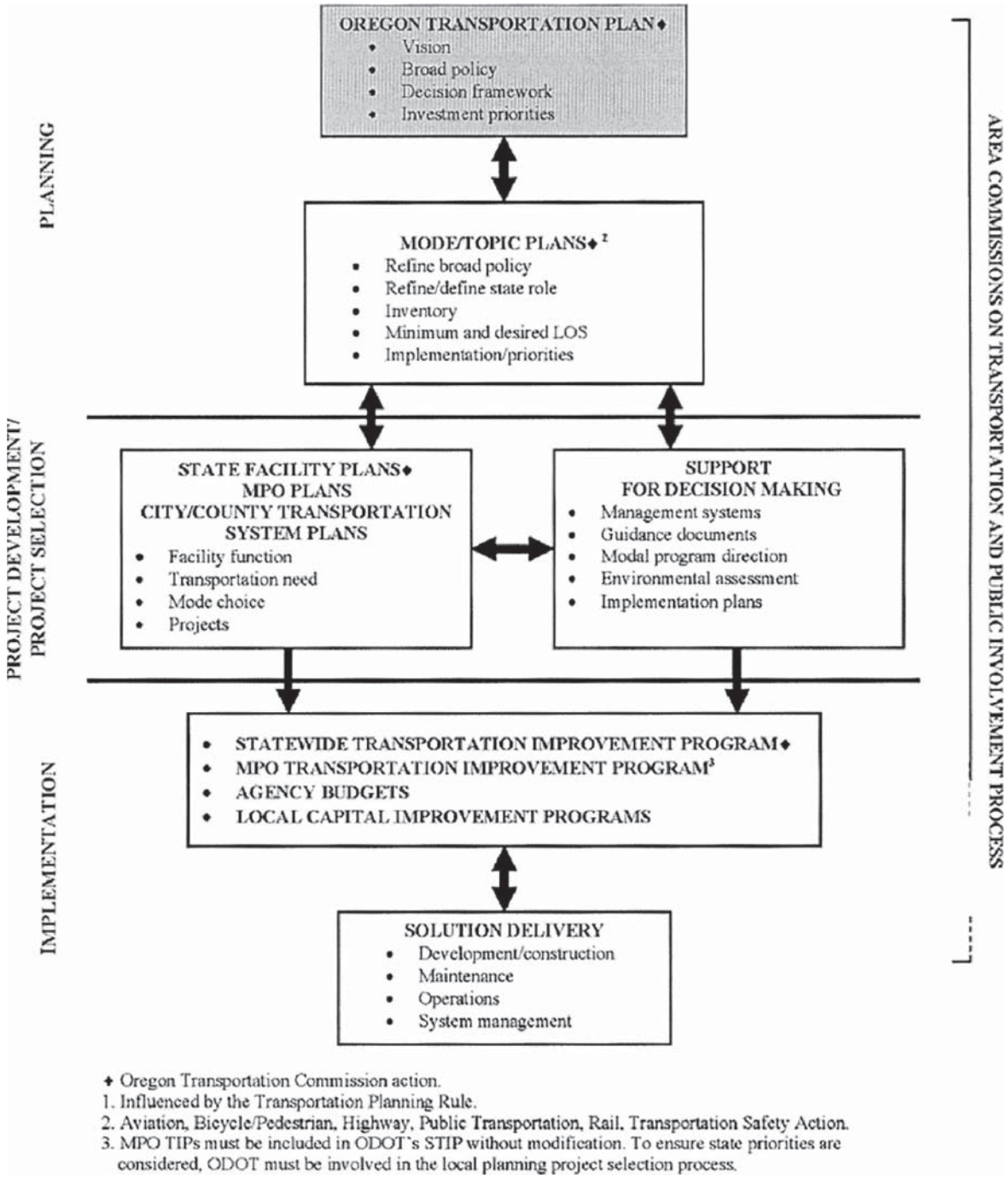
Figure D.20 illustrates the organizational structure of the Oregon Department of Transportation.



Source: www.oregon.gov/odot/docs/orgchart.gif.

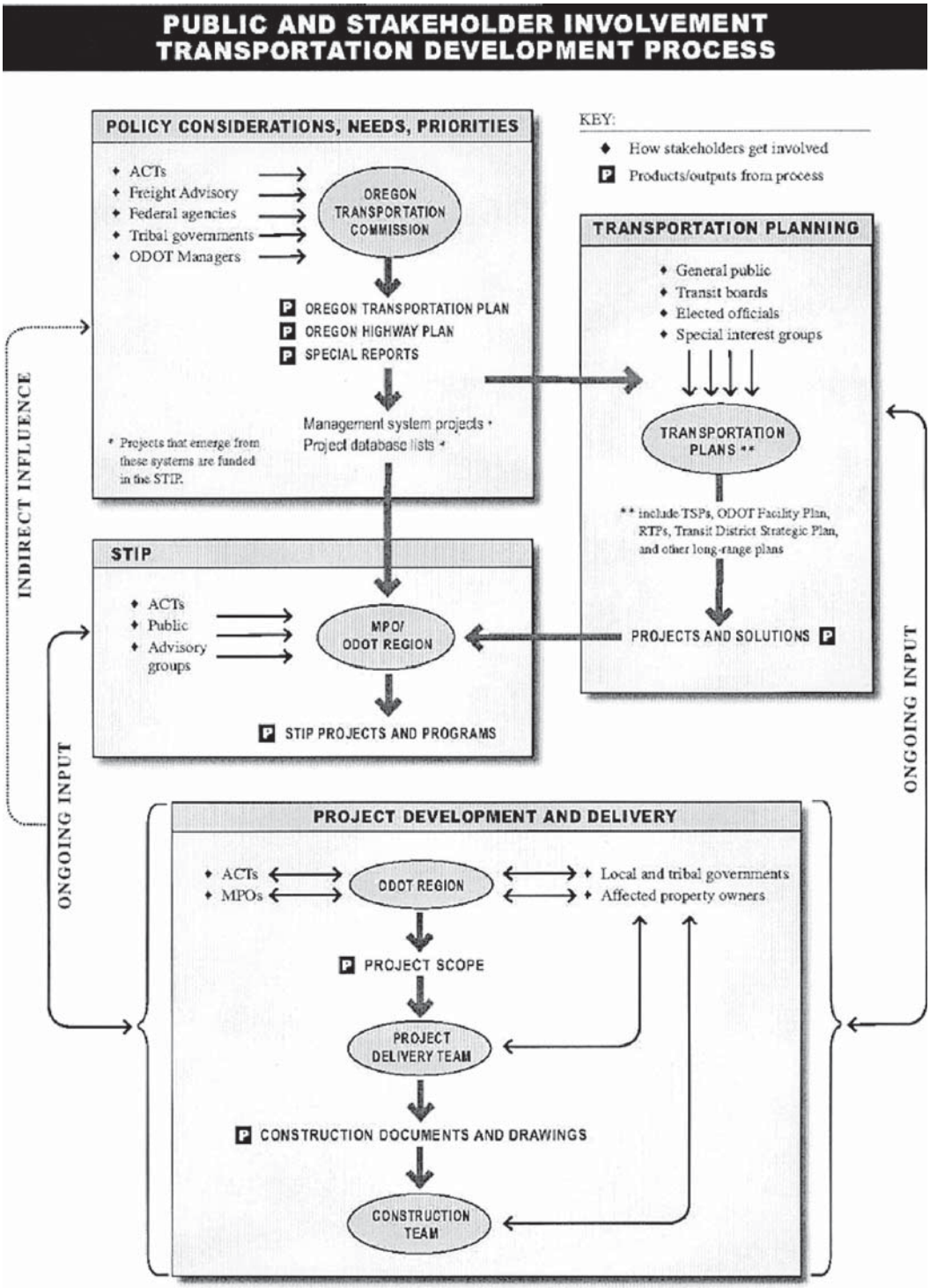
Figure D.20. Organizational structure of the Oregon Department of Transportation.

Figures D.21 and D.22 illustrate Oregon's planning framework and development process.



Source: *Oregon Statewide Transportation Improvement Program STIP User's Guide*, undated.

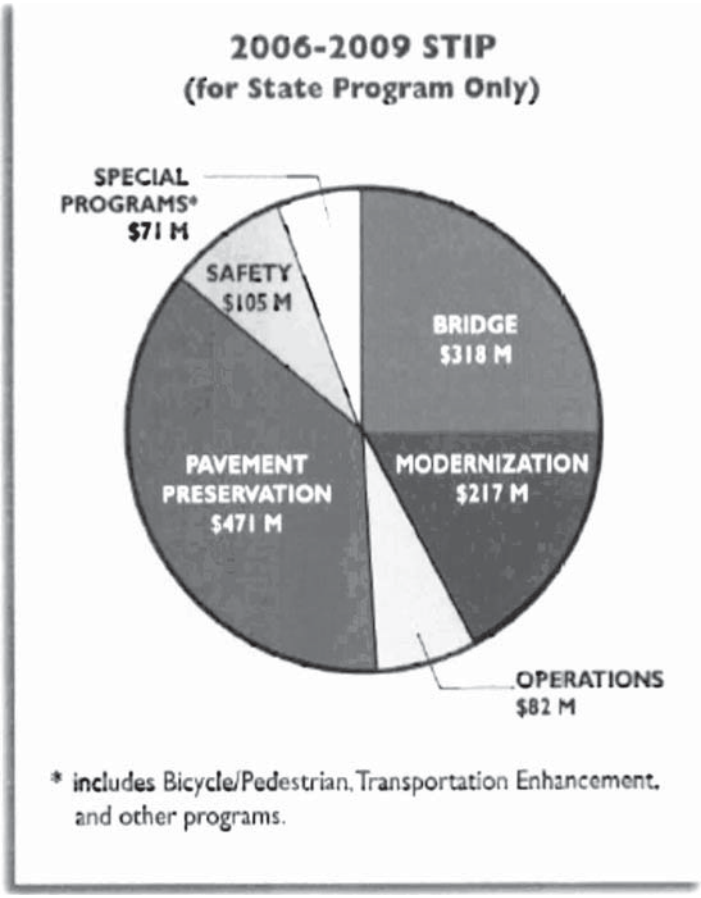
Figure D.21. Oregon planning framework.



Source: *Oregon Statewide Transportation Improvement Program STIP User's Guid*e, undated.

Figure D.22. Oregon transportation development process.

Figure D.23 indicates the 2006-2009 STIP major program allocations. With the exception of the operations budget (primarily maintenance), all categories of expenditure are driven by either the ODOT management systems or by the ACTs.



Source: *Oregon's Statewide Transportation Improvement Program: A Citizen's Primer*, undated.

Figure D.23. Oregon STIP major funding allocations.

Oregon Sources and References

- Draft Oregon Transportation Plan, Oregon Department of Transportation, Planning Section, Transportation Development Division, June 29, 2006.
- 2008-2011 Statewide Transportation Improvement Program: STIP Development Manual, Oregon Department of Transportation, March 3, 2006.
- Final Statewide Transportation Improvement Program, 2006-2009, Oregon Transportation Commission, August 17, 2005.
- *Oregon's Statewide Transportation Improvement Program: A Citizen's Primer*, Oregon Department of Transportation (undated).
- *Oregon Statewide Transportation Improvement Program: STIP User's Guide*. Oregon Department of Transportation, www.oregon.gov/ODOT (undated).

Vermont Agency of Transportation

Table D.23 lists the Vermont Agency of Transportation (VTrans) personnel and others interviewed as part of the project.

Table D.23. Vermont interviewees.

VTrans Interviewees	Title/Position
David C Dill	Deputy Secretary
Mel Adams	Director of Policy and Planning
Matthew C. Langham	Transportation Planning Section Chief
Lenny Le Blanc	Deputy Director of Finance and Administration
Samuel B. Lewis	Operations Director

Non-VTrans Interviewees	Title/Organization
Christopher P. Jolly, P.E.	Programming and Planning Engineer, Federal Highway Administration
Peter Gregory	Executive Director, Two Rivers-Ottauquechee Regional Commission
Charles H. Wise	Senior Transportation Planner, Two Rivers-Ottauquechee Regional Commission
Peter R. Keating	Senior Transportation Planner, Chittenden County Metropolitan Planning Organization
Thomas Kennedy	Executive Director, Southern Windsor Regional Planning Commission
Jason Rasmussen	Transportation Planner, Southern Windsor Regional Planning Commission

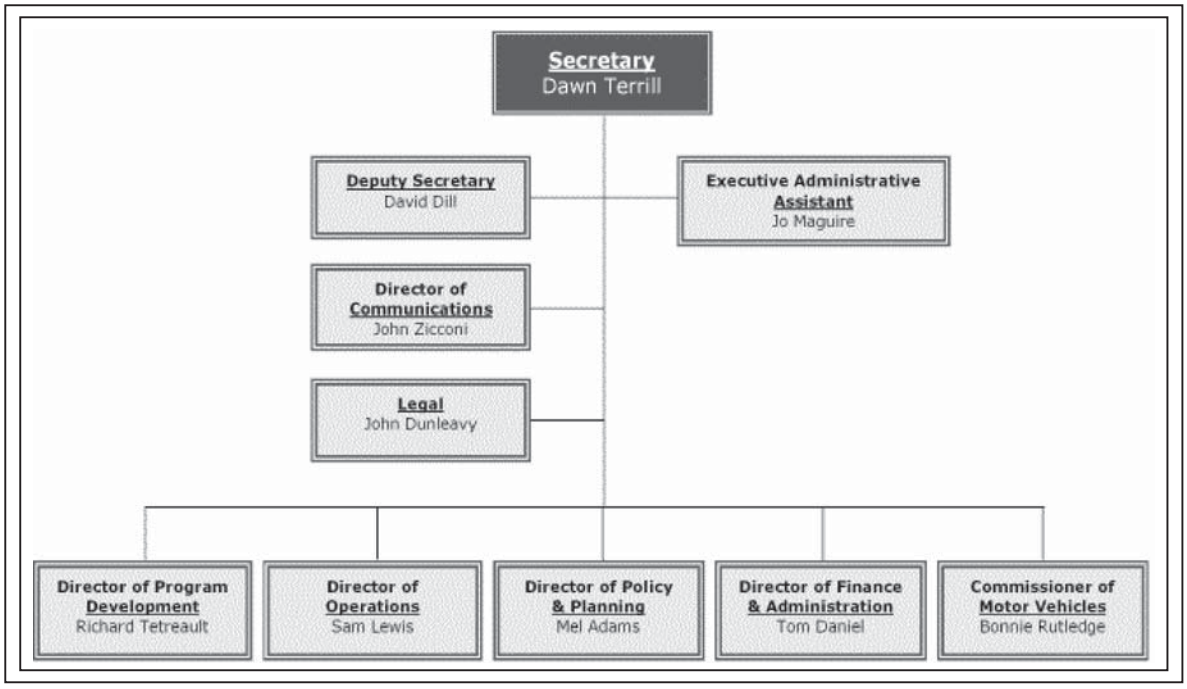
Table D.24 highlights the extent and nature of the Vermont highway and transit network.

Table D.24. Characteristics of Vermont's surface transportation network.

Population *(2005 est.)*	
Statewide	623,050
8 Urbanized Areas (over 50,000)	
Licensed Drivers	278,187
Registered Vehicles	523,212
Street/Highway System *(miles)*	
Federal Aid Highways	2,634
State-owned	2,704
National Highway Systems (NHS)	595
Interstate Highways	320
Bridges (State-maintained)	1,027
Transit Systems	
Urbanized Area transit systems	1
Rural transit systems	22

Source: U.S. Census, *Highway Statistics 2004*, VTrans, APTA.

The VTrans organization chart is shown in Figure D.24.



Source: Provided by staff.

Figure D.24. Vermont Agency of Transportation organization.

At the present time, performance measures do not play a prominent role in either the long-range plan or the project selection process. Because programming is more of a technical process for managing projects as opposed to a project selection process, the policy framework does not seem to influence it directly.

In Vermont, the basic allocation of resources to the various STIP programs is determined by VTrans based on a variety of factors, including funding levels of federal aid categories and objectives and priorities of each program. While it is unclear how the LRTP influences this process, the goals of the LRTP are generally reflected in the allocation.

The selection of projects actually takes place through the five-year budget/capital program. This is prepared by VTrans based on priorities determined within each program area. Among the most significant criteria, given constrained funding levels, are:

- Previous commitments; and
- The readiness of projects to go forward through design and environmental processes.

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Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation