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**Conference on Transportation
Programming
Methods and Issues**

CONFERENCE ON TRANSPORTATION PROGRAMMING METHODS AND ISSUES

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**Conference on Transportation Programming
Methods and Issues**

TRANSPORTATION RESEARCH BOARD / NATIONAL RESEARCH COUNCIL

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TRANSPORTATION PROGRAMMING METHODS AND ISSUES

INTRODUCTION

The transportation programming process combines information on transportation system conditions, investment options, policy direction (preference for specific objectives and performance goals), and resources (staff and funding) to define the most cost-effective transportation improvement program. An important objective of the programming process is to assist both technical and policy decision-makers by presenting options and clarifying their benefit/cost trade-offs. While simple in concept, the complexity of the transportation decision-making environment has resulted in wide variations in how, or indeed whether, this information is used in the programming process.

It has been more than a decade since the last conference on transportation programming was held. During this time, many changes have taken place that create new challenges for programming and decision-making in the 1990s and beyond. These changes include the following developments:

- There is a greater emphasis on maintenance and rehabilitation of aging infrastructure versus facility expansion.
- A series of programming-related requirements in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) have dramatically changed the decision-making environment.
- The Clean Air Act and other environmental mandates are having a significant impact on programming decisions in many states.
- Funding pressures at all levels of government are creating increased interest in private-sector funding sources and a concern about maximizing benefits from existing resources.

Given the significance of these changes, it was timely to bring together a group of leaders in the field to discuss the implications of these developments for programming and the variety of approaches that can be used to address them. In doing so, it was recognized that no one "right" approach exists because of the differences in local/state institutional structures, programming processes, system needs, financial resources, and funding mechanisms. Nevertheless, basic principles and methods can be identified that will assist local and state agencies in programming transportation improvements.

Objectives of the Conference

At the request of the Federal Highway Administration and the Federal Transit Administration, the

Transportation Research Board conducted a national conference bringing together known experts to:

- Review the emerging issues affecting program decision-making.
- Review current and new approaches to programming, including institutional, process, and technical aspects.
- Review steps required to address the emerging issues, including a research agenda that practitioners would find useful.

Organization of the Proceedings

The Proceedings are designed to provide a summary of the discussions in the workshop sessions and identify the key issues affecting programming in the future.

The next section of the Proceedings includes a summary of the issues, approaches and problems encountered by the workshop participants and others. The knowledge gaps and research needs are also identified.

The Conference conclusions and recommendations are covered in sections on the changes that ISTEA has made in the programming environment, the issues that will affect programming in the future, and the information, technical assistance and research needs that exist.

Summaries of the case studies and presentations made at the Conference are also included in the Resource Papers so that practitioners can continue the discussion and move toward resolution of these issues.

SUMMARY OF FINDINGS

The Conference discussions were guided by, but not limited to, issues and questions prepared by the conference steering committee that were disseminated to all attendees. These were targeted around four major topic areas:

- Setting Program Goals and Objectives;
- Programming Methods;
- Multimodal Programming Process; and
- Program Implementation and Communication.

The issues, approaches and problems raised in small workshop sessions were summarized by the Session moderators, and presented on the final day of the Conference.

Resource papers and presentations to the Conference attendees were used to provide a basis for the workshop sessions. Summaries of these are

provided in the Resource Papers and identified in the opening to each Workshop section of these Proceedings.

Setting Program Goals and Objectives

The discussion of goals and objectives encompassed several issues, but the themes can be summarized in four major areas:

- Goal Setting,
- Implementing the Goals,
- Multimodal Programs, and
- Management Systems.

A significant amount of discussion was related to the goal setting process and how to ensure that there was a value to the outcome of that process. The goal setting process has been affected by realizations such as "we cannot build our way out of congestion." Goals for transportation improvements and the expectation of what transportation can provide are lower than in the past. The projects and strategies that are being implemented are different. The discussion in the workshops identified some aspects of the programming process that have changed as a result.

Resource Papers

The presentations summarized methods used to set and use goals in programming at the state and local level. The differences in agency mission, regulations and responsibilities were identified as significant factors in how goals and objectives were used. A key point made by the speakers was the link between goals, priorities, alternatives and the projects and programs that are selected. The case studies summarized in the Resource Papers suggest some factors that should be included for a successful goal-setting process, as well as some of the benefits of a well-coordinated program. The interaction among the participants in the process — whether the analysis covers a state, region, city or corridor — was a significant benefit of the process, in addition to the more flexible and improved program evaluation that results from a more complete evaluation of the alternatives.

For more information see the following in the Resource Papers:

Transportation Planning and Performance Measurement in Washington State by Brian J. Ziegler, P.E.
Case Studies: Different Approaches for Defining Program Goals by Darwin G. Stuart

Goal Setting

There was general agreement on what form the goals should take. They should be broad policy statements that are dynamic and flexible. There was concern that if the goals were too specific, it would be too difficult to react to opportunities or political and economic changes. A good goal-setting process requires asking questions like, "what are we trying to accomplish with transportation?" and "what can be done with transportation?" because transportation projects often are not pursued for purely transportation reasons.

The goal statements should, however, be specific enough to guide the program rather than just be a general value statement. The development of the goals should be integrated with the political process so that they relate to other policies and goals such as economic development, quality of life, and access to employment opportunities. The goal setting should also recognize that there are three types of goals—objective and quantifiable, subjective and quantifiable, and subjective and not quantifiable. The process should also recognize differences on regional, cultural and population bases.

Developing the goals was identified as a two-way process. Comments from the public were noted as a requirement, if the goals are to be relevant. But there should also be a "goal education" process during and after decisions are made so that the public and decision makers understand and incorporate the goals into the day-to-day operations of the public and private sectors. The reaction to the goals will allow programmers and planners to identify whether the goals are the result of lowered expectations due to funding or other constraints, or if they are too unattainable. Realistic goals are not only more useful for programming, but are also more likely to be supported by elected officials, whose focus is frequently on short-term improvement. Including issues such as economic development, land use patterns and other "outcomes" of transportation investment in the proposed goals is the method to ensure that the public and legislative groups understand the goals.

Implementing the Goals

There was a variety of experience with the success of turning goals into policies, programs or projects, but the consensus was that sometimes it is very hard to see the connection between the goals and what is implemented. The concern that public agencies be accountable for their spending relates to the connection between goals and implementation, which demands better methods to make and communicate that connection. Goals are included in the priorities illustrated by the project selection process, but an explicit statement of those goals is not always

included, to the detriment of public acceptance of the outcomes.

While most states have a state plan that guides programming, some, such as Minnesota, Washington, and Florida, use a decentralized programming process where the state plays a relatively minor role in which projects ultimately get funded. This allows rural areas to program funds for new roads, safety or rural transit projects, while urban areas invest in HOV lanes, road widening, transportation demand management, transit, or land use changes. Funding is allocated to the region in a "block grant" fashion which suballocates the funds on a regional basis, rather than the more typical categorical or modal funds. This process also allows different standards for road service to be easily implemented, rather than requiring negotiations on such issues as acceptable level of congestion on a statewide basis. Most states have a process that uses input from the local area on which projects to consider for programming, but few have delegated project selection to the local or regional level.

The effect of political influence in goal setting was recognized as a reality, but the relevant point for many in the programming field is that there are statutory or constitutional allocations of funds at the state level that are not affected by federal legislation allowing flexibility. For there to be a change in this issue, many States will have to pass similar legislation, constitutional amendments or regulations.

The variety of political subdivisions that have competing goals was also seen as a potential problem. The consistency of the goal statements was one concern, but the program functions also relate to project selection authority and whether the national or state interests have any bearing on the form of the program. There are not only different goals, problems, and resources, but also different values that impact the process.

Multimodal Programming

The universal conclusion is that most levels and agencies are on some path toward a multimodal project selection process. There also seem to be different rates of travel and different amounts of "fog" on this path that affect progress. No one is at the desired end point, and to some extent there is no agreement on what that end point looks like. The disagreement stems from perceptions of the effect that multimodal programming will have when the needs of each mode or type of project are so great. While theoretically this is the time when a multimodal process is particularly valuable, the perceived reality is that the choices are more constrained by the high level of needs.

There also is a sense that multimodal programming may only make sense at the regional or local area level. The goals and objectives can be used within modal funding areas, but it is much more

difficult to program multimodally at the state level. State legislatures seem to be much more comfortable with setting policy by allocating funding to categories of projects, rather than specifying goals. They do not yet feel comfortable with the outputs and outcomes of a multimodal or intermodal programming process.

Management Systems

The ISTEA management systems were seen as a way of making the connection between goals and objectives, which are at a higher level of decision making, and implementation in the form of projects or policies. The management systems should influence the chosen strategies and projects rather than the goals.

The subject of the particular management system determines the amount that they are used for this purpose. Most states are happy that they now have control over how to incorporate the management system into the goal setting and programming process, with a great diversity of opinion expected. The roadway asset management systems (e.g., pavement, bridge) will probably remain as a part of all states' programs, but the link between other management systems and the programming process is less obvious, and some of those may not be continued. Another factor in the fate of management systems may be tort liability—state DOT attorneys are concerned that the management systems may be legal notice of deficiencies.

Programming Methods

The programming methods topic was designed to identify practices and criteria to make programming decisions, particularly in multimodal systems. The discussions generally were in four areas:

- Priority Setting Methods,
- Multimodal Criteria and Methods,
- Role of Management Systems, and
- Threshold Criteria for Evaluating Projects.

Resource Papers

The planning and programming processes described by the speakers continued the theme of connecting the goals, priorities and selected projects together to deliver the outcomes that are expected of transportation in state and local programs. Surveys of statewide planning and programming activities were used to identify the existing practices and highlight some of the innovative methods, as well as to point out problems. The integration of management systems into the programming process of Michigan was discussed and linked to the importance that DOTs place on customer satisfaction. Risk analysis can

improve decision-making and communication by allowing groups to reach consensus on infrastructure development projects. The improvements over traditional forecasting and communication methods are significant, both for the individual project and for the long-term relationship between agencies and community groups.

For more information see the following in the Resource Papers:

Role of ISTEA Management Systems in Priority Setting and Program Development by Theresa Petko

Statewide Planning as a Framework for Programming Decisions by James L. Covil

Risk Analysis as a Tool for Making Benefit/Cost Work in an Environment of Conflict by David Lewis

Priority Setting Methods

There were two primary methods for comparing projects—comparing all regional projects to each other and comparing projects within categories. It is difficult to compare projects such as pavement resurfacing, roadway widening, high-occupancy vehicle lanes, pedestrian enhancements, and transit system maintenance or expansion to each other, but it was the sense of the groups that this was the best way to evaluate improvements. The Metropolitan Transportation Commission (San Francisco-Oakland area) and the state of Ohio were mentioned as two of the very few areas that were using some type of regional comparison.

Most areas, however, were using categorical mixes that have been used for many years. Projects of similar type are compared against each other, with funding allocated to each category. Point systems to evaluate projects were being phased out in some areas, and were being used as a surrogate for regional benefit estimates in other areas.

The significant caveat on regional comparisons, however, is that very few locations are doing project selection this way for a variety of reasons. It is difficult to agree on, or estimate, the benefits, especially for some strategies in programs such as congestion mitigation/air quality (CMAQ). The social and environmental goals addressed in some programs mean that project types are not as homogenous as in the past when the focus was on decreasing congestion and preservation of the pavement. Regional politics have always affected programming decisions, but in the absence of good data, political influence may be more decisive in where funding is targeted.

Some program elements may be best addressed at a level above the region; bridge replacements were mentioned as an example of a program that was easier to prioritize and fund at the state level than locally. Some state and local laws prohibit some of the fund transfers that might be necessary to allocate money to certain types of projects if a regional analysis were

conducted. While this is not consistent with ISTEA regulations, federal transportation legislation does not repeal these (often constitutional) laws.

Multimodal Criteria and Methods

Since there are few examples of good multimodal comparisons, there was a significant interest in seeing the development of project comparison tools that would allow evaluation of individual modes (because those will continue to be needed to identify problems) and mixed mode solutions to transportation problems. Reference was made to a mental adjustment that was needed for agencies to move away from modal contrasts.

The increased expectations for altering funds from historic allocations (or “flexing”) has put additional pressure on the development of multimodal comparison techniques. The significant programming backlog that exists in many state programs, however, has caused much of the funding to remain in its traditional categories or only change by small amounts. Several states such as California, Oregon and Minnesota have a much greater share of their program devoted to non-highway projects due to goals of land use change, and transit and rideshare usage.

Intermodal projects, both freight and passenger, have also resulted in changes to criteria and methods. These projects do not compete well in the traditional formulas, and have attributes that must be accommodated in new ways. The inclusion of travel time savings due to a better transfer facility also requires a change in the usual prioritization schemes, which use traffic volume and capacity as a surrogate for travel time savings.

Role of Management Systems

The National Highway System legislation that made management systems optional was newly passed at the time of the Conference, and there was a significant amount of speculation among the states regarding which systems would continue to implementation, and which would not. There was consensus that the usefulness of a management system was that of a tool to help identify needs and consequences of different resource allocations. These system level analyses were consistent with the major problem identified by participants—the data collection necessary to support the management systems. If more detailed analyses were to be performed, this problem would be exacerbated.

A concern that illustrated where management systems did not have a role in statewide programming was in the coordination of system improvements by different levels of government. Where the DOT and a county/city agency had road segments that did not match, for example, interagency cooperation and

communication should identify and resolve the problem.

Threshold Criteria For Evaluating Projects

Several states and MPOs are using a multi-step process to evaluate projects for funding. A screening step identifies projects, programs or strategies that will not be ranked high enough to compete successfully and will not be carried to a more detailed stage of analysis. This reduces the workload, time and resources committed to the programming function. Some states also use criteria related to the stage of design, project approval or right-of-way acquisition to limit the projects that receive funding commitment. This was governed by state laws as much as it was by any judgement about the best business practice.

Multimodal Programming Process

Aspects of the multimodal programming process were addressed in all sessions, but one set of workshops focused specifically on issues of experience and opportunities of the process. The experiences were summarized as "the good, the bad and the missing" and other discussions focused on overviews of some of the key processes or programs.

As a broad summary of the workshops, there is movement toward multimodal planning and programming processes and an interest in improving the responsiveness of the program to the needs of the public. Roles and responsibilities are changing because of the unique interests, limitations and needs of states and local areas. This was characterized as "one size fits none"—no policy or approach will work everywhere. New processes will be a combination of good practices and the local situational constraints or opportunities.

Resource Papers

Summaries of the programming process used in the states of New Jersey and Kansas, the city of Tucson and the San Francisco-Oakland Bay Area were discussed as an overview of the programming processes used in state and local project selection. The variety of methods used to receive comment about possible projects, evaluate the wide range of program categories, and prioritize the possible projects illustrated the challenges and diverse solutions used to move ideas into implementation.

For more information see the following in the Resource Papers:

Negotiated Capital Programming in New Jersey by Mark L. Stout

PIMA Association of Governments Transportation Improvement Program by James W. Glock
Transportation Programming Process in Kansas by Debra L. Miller
1995 Multimodal Project Application for Surface Transportation Program Funds by David Murray

The Good

The outcomes from multimodal programming are more responsive to local needs and priorities. This is partly a result of increased participation by a range of stakeholders and the new partnerships and collaborations that take place as part of the process. It is also an outcome of ISTEA which has fostered more rigorous analyses and greater accountability. The management systems are also a part of the better information in subjects such as pavement and bridge systems, but there has not been much effect in the multimodal area.

The Bad

Uncertainty in projects and fiscal resources combines with the financial constraint requirements to make adjustments difficult. When a project in the first year of a program cannot be pursued because of design, environmental, funding, public comment, or other problems, the financial constraint has meant that projects must move ahead from later years. This has caused problems in some places. The programming and planning professionals are focused on keeping the commitments to the public that are included in the Transportation Improvement Program (TIP) and State TIP (STIP), and the financial constraint interpretations make that job difficult.

While increased participation and collaboration is a "Good", it has also lengthened the process, which places more pressure on programmers to keep the process moving.

The Missing

The federal mandates have given clear direction to the programming process, but states and local areas do not yet have all the processes in place to react to those mandates. Legislative requirements, political pressure, allocations by category, and adapting to current business practices are a few of the issues that were mentioned.

These are heightened by the lack of uniformity in current practice. While the schedules will evolve, current procedures include cycles of different lengths for state plans, local plans, and federal requirements. Lack of consistent interpretation among federal region offices is also a source of frustration for state officials,

although the states that have more flexibility are not interested in giving it up for the sake of consistency.

Freight issues in particular are still under-represented in programming processes, and many cities and states are struggling with how to mix the public and private sector interests in this area.

Process Status Overview

Several issues were mentioned in discussions about the changes that ISTEA has brought to the planning and programming process. Balancing diverse needs, enhancement programs, multimodal programming and financing were cited as significant concerns.

Balancing the diversity of needs, whether those are categorized as urban/rural, travel modes, public/private, agency/citizens, is a significant challenge resulting from the open process that ISTEA has encouraged. Committees, formula allocations, allocation by source of funds, and retreats or meetings that include all stakeholders were mentioned as ways that are being used to address the variety of interests. A workable and successful process is both science and art.

The enhancement program was identified as a way that new partners and parties are being included in the process, but it does so by partitioning funds so that they cannot be used for other projects. This was cited as creating a "new inflexibility" that has led to some resentment that modes or historic programs are not being properly addressed. Some participants noted that there is a potential for the loss of public support of transportation funding if taxpayers see the money "diverted" to other goals. The participants noted that in many cities and states, the amount of time devoted to the discussion and analysis of enhancement projects was often out of proportion with the 10 percent of the funds that the program represents.

The outlook for multimodal programming in most areas is that it will happen after the institutional issues and challenges are addressed, and when better tools are available. The organization of departments of transportation and other agencies, where the planning and programming functions reside, how the modes are treated in those organizations and how the partnerships between agencies evolve are some of the key questions that will be answered in this process.

The financing issues that were discussed were non-traditional sources and getting the most from the funding sources that are available. Toll roads and congestion pricing projects were frequently mentioned as the most obvious sources of new funding. The efficient use of current resources is impacted by shortened resource times; getting projects that have all the necessary approvals on the list, and identifying potential problems early were the ways to improve the use of the funds.

Program Implementation and Communication

Issues related to developing and communicating the program can be summarized in two themes: process and products. The process of getting public participation, proper and timely information, and outcomes that relate to the goals were important aspects of a good programming process. The important products included technically useful, as well as understandable, documents and plans, and a program that can be implemented according to the schedule and budget.

Resource Papers

Creating opportunities for informed involvement by the public was the theme of the two resource papers prepared for the implementation and communication workshops. The processes in Idaho and Ohio show that improved communication methods result in increased internal agency coordination, partnering with other public agencies and the private sector, and better input from the public. Both Ohio and Idaho view communication tools as part of the long-range planning and programming process.

For more information see the following in the Resource Papers:

Idaho User Friendly STIP by L. Ray Mickelson
Public Involvement in Program Development and Delivery by John Platt

The Process

The TIP/STIP process should be guided by the broad strategies and goals that the public and technical analyses identify as important, rather than have the individual projects or technologies dictate the program. Implementation of individual projects or techniques occurs at the corridor level where specific problems are addressed. This was an example of how a set of performance measures can be used to tie problems, goals, and solutions together.

Developing the list of projects and strategies that go into the TIP and STIP would be easier if there were more flexibility in the volume of projects that could be included in the first year. Some participants have state procedures that allow this already and others have more flexible rulings from the federal level. Some states essentially have a six or seven year STIP, where no work begins on a project until it is included in the plan, even though the scope, concept, or even the decision to do the project may change. Other states will not put a project into the STIP until some work has been performed to identify the environmental impacts, cost, design, and other elements, resulting in a three-year STIP. Projects can be shifted between federal funding and state funding in either of these models but

the design has to be consistent with requirements of each, leading to some "overdesign" relative to funding source.

Some participants believed that some level of over-programming would reduce the need to amend the TIP or STIP when a project schedule slips. The over-programming can be based on the historic level of successful project delivery; values of 15 to 25 percent were mentioned as reasonable. This would replace the current process of shifting projects from second or third years of the three-year TIP. Some states such as Illinois and California already have a process for doing this, while other states such as New Mexico separate funding into annual increments to address the limited funds problem.

The public participation requirements were not seen as too different from those which would be included in a good basic program before ISTEA. Flexible guidelines and the recognition of the many different methods of involving the public were seen as desirable improvements to the current regulations. There was a recognition that the process is longer now, but the end product is improved. Descriptions of "good practice" included a variety of user-friendly aspects such as listening sessions, media coverage, local access cable television broadcasts, use of the Internet, focus groups, and information displays in shopping malls or other locations where citizens congregate.

Better cost and financial resource estimating processes and tools were identified as a need. Better procedures for developing cost estimates in the TIPs and STIPs were mentioned as very important. There is also a need for assistance in performing revenue projections. There is some expertise at MPOs and states, but the area is usually not a familiar one for transportation professionals, and some guidelines could be useful.

Provisions for how cost overruns get charged and who pays were discussed. The "scope creep" of a project was also identified as a part of the cost overrun problem; some of the difficulty is in the disconnect between the planning, programming and design offices. While one cost estimate and concept may be included in the program, the design group may find a different alternative is necessary or preferable.

The Products

The user-friendly process was carried into the products as the most important focus for good communication, to all audiences. While the meaning and form of good communication will change according to whether the audience is technical or non-technical, the goal is the same—clear and timely information. Removing "code" words/symbols/abbreviations and speaking in terms that the public can understand was an important guideline for the many different types of public products, which included Internet Home Pages, CD-ROMs, geographic information systems to display

information, and printed executive summaries that address the topics of concern to citizens. Some states use two documents to separate those for public communication from those used for more technical purposes.

As the program proceeds, accountability can be thought of as a product of the process for both the public and the technical community. Progress toward goals will be the focus of some public communications, and the information necessary to do this must be included from the beginning. Direct responses to the public about their project ideas is a method to build communication links. Information such as schedule slippage or cost estimating precision for certain types of projects, or the status of project designs and clearances can be used to assist MPOs and DOTs in the programming process. Issues related to communication breakdowns between and within agencies caused at least as much discussion as the external communication problems.

CONCLUSIONS AND RECOMMENDATIONS

The Transportation Research Board's Committee on Programming, Planning and System Evaluation is working to inform practitioners and funding agencies about available resources and information needs to improve programming in the 1990s and beyond. Understanding the concerns and opportunities was the first part of this process—the Conference provided an excellent forum for this. How well the issues and needs are addressed will determine how much improvement is made between now and the next Programming Conference. The importance of the issues cannot be overlooked, but neither can the budgetary pressures that constrain the ability of state and national agencies to address the range of important public needs. The Committee suggests that careful study of the issues and recommendations included in these Proceedings will provide guidance and justification for addressing the changes and needs for Programming issues.

The conclusions and recommendations of the Conference are divided into 3 areas:

- The impact of ISTEA—ISTEA was identified in many discussions as a causal or catalytic agent in the changes that have occurred, and that will occur.
- The issues that will affect programming in the future—The critical issues relate to institutional arrangements, process improvements and financial limitations.
- The needs for information, technical assistance or research—There is a need for information about existing techniques and processes, technical assistance to help programming professionals adopt the best practices and research possibilities to expand knowledge in the new environment.

ISTEA IMPACTS

As the Conference proceeded it became apparent that one significant product of the discussions was a list of changes that resulted from ISTEA. The key issues that programming professionals will face, and the gaps between experience or knowledge, and the techniques or tools required to answer future challenges could, in large measure, be related to a provision in ISTEA or the manner in which the ISTEA regulations were put into practice.

The changes summarized below are those that represent a general consensus of the groups, with some expression of the view of the positive or negative aspect of the change.

Multimodal Focus

ISTEA has reinforced the movement toward a less modally focused program at all levels of government. There will continue to be an interest in modal improvement programs because that is where projects or policies are implemented, but there is an interest in achieving a mode-neutral allocation process at the system level.

Planning as a Major Force in Programming

The connection between goals, objectives, performance measures, improvement strategies and the projects and programs that are funded is much stronger since ISTEA. The group saw many positives in the description of the planning factors in ISTEA and the trend toward more integration of project selection and planning. In some states ISTEA has "legitimized" the planning process and made the cooperation between MPO and DOT staffs easier. "Rational" decision-making that is the result of including all stakeholders and a decentralized programming process is a significant outcome of ISTEA.

Fiscal Constraint and Flexibility

The conference attendees agreed that the discipline imposed on planning efforts by the requirement that the plans be financially constrained was one of the most significant changes brought on by ISTEA. There were some technical issues related to the need for some "over-programming" in the initial year of a program to account for the fact that some projects will not be ready for letting when scheduled. There must be enough flexibility in programs and plans to adjust for this reality.

There is less tendency to allocate to individual modes or types of projects since ISTEA. There are many states and programs that use a "sub-allocation" to decide how much funding is targeted to certain

program elements, but this is less frequent and there are more examples of states and local areas attempting to use trade-off analyses that provide a quantitative basis for making what had previously been policy decisions. This trend has been reinforced by the increased flexibility in fund transfers between modal funding sources.

Financing Issues

There are several innovative financing opportunities and, although there have not been many projects funded under these guidelines, there is clearly some encouragement and some interest. Toll roads, congestion pricing and infrastructure banking were mentioned as possible methods.

Programming Process and Decision-Making

There are several changes in the process of deciding which projects and programs get funded. Central to these was the increase in the authority of Metropolitan Planning Organizations, and the cooperative and decentralized decision-making that has accompanied that shift in power. Among the other changes noted were the increased emphasis on public participation, the involvement of new public and private sector "players" in the process and more accountability to the public. More "non-traditional" projects have been funded as a result of these changes.

Air Quality

There were several changes noted in every area of the Conference concerning how air quality concerns are being addressed as a result of ISTEA and the Clean Air Act Amendments. One procedural change is seen in the Congestion Mitigation/Air Quality (CMAQ) program. The priorities and projects selected for funding in this program are set at the local level rather than at the state level. A source of funds that is not controlled by the State DOTs allows local governments to pursue projects that may not be highly ranked in a statewide programming process.

Non-attainment status is also a major criterion in state programming, and many Management Systems use air quality criteria to identify deficiencies. As a result, general traffic capacity expansions are the last option considered in many urban areas.

One negative effect has been felt in areas with good air quality. Temperature, wind, topography or other conditions allow some medium sized urban areas to have an attainment designation with respect to air quality standards. Funding for traffic congestion reduction, however, is targeted to non-attainment areas, leaving the good air quality areas without access to higher funding levels.

Management Systems

There was a recognition that it may be too soon to evaluate the impact of Management Systems. Some have been used for a while, and others may never be used (with the mandate for some removed), but they appear to offer a way to store valuable information and turn it into knowledge for better decision making. One participant termed the Management System role as "one part of a rational decision-making process in a state." States such as California, Michigan and Pennsylvania use the asset management systems (principally Bridge and Pavement) to select a relatively high percentage of the rehabilitation or reconstruction projects funded in those categories. Iowa also used the public transit management system for programming purposes in fiscal year 1995.

Successfully using Management Systems involved a few key "dos" and "don'ts." They cannot be treated as a "magic box" that delivers answers or as goal-setting processes. They are also not useful if they are only seen as large databases with no connection to the planning and programming functions of transportation agencies. They can be used as one way to move away from a process involving modal-dedicated funding, and toward a process where project merit and financing are separated. They are also easily used to identify deficiencies in system condition and operation, and thereby suggest program content.

While the Intermodal Management System was frequently mentioned as one that would not be continued, it was noted that it could help identify projects where public funding might be added to private sector funds and increase the rate of return to a feasible level.

A state DOT organizational structure that worked well with the information flow from a Management System was used in Wisconsin and Iowa. The planning, programming and budgeting processes report to one person, which makes coordination relatively easy. States that do not have this type of structure use liaison staff to make the linkages.

Need for Continued Improvement

There were several areas where the need for continued improvement was noted. Some changes in regulations were seen as extending the process, increasing the amount of paperwork, with little change in outcomes. The mandates for items such as crumb rubber asphalt, innovative guardrails, demonstration projects and the switch to metric measurements are offered as representative issues that Conference attendees thought could be changed with no diminution in the objectives of ISTEA. One area that is more a result of the changes brought on by ISTEA, than by the Act

itself, is the increased expectations—the pressure to deliver on the promise of ISTEA has been significant.

CRITICAL ISSUES TO IMPROVE PROGRAMMING

Another summary that cuts across the individual topics were the important issues that face the programming techniques and institutional relationships. These are related in some ways to ISTEA impacts, but are also part of the evolution of programming as more is learned, and new tools are developed. The issues are presented as action items that might focus the efforts of agencies and legislation to react to the needs the Conference participants identified.

Develop a True Multimodal Process and Supporting Techniques

Several states and MPOs are addressing this issue, but much remains to be done. Multimodal programming needs to begin with the linkage of goals, objectives and performance measures. The programming decision measures need to be able to identify benefits from a wide range of mainline, access and intermodal transfer facilities, as well as management and operations improvements for those modes. Key programming decisions also need methods to identify the trade-offs between improvement of expansion of systems and preservation of the existing infrastructure and operating systems.

Identify Effective Institutional Arrangements

The need for a multimodal transportation focus is reflected in changing relationships between the federal agencies, states and MPOs. The organizational structure and the decision-making policies are changing at all levels of government, and the guidelines for programming should reflect this diversity with more flexibility in implementing ISTEA. The logical outcome would be broad federal guidelines that adhere to the spirit and the law of ISTEA, but allow the states and MPOs the discretion to craft a process to implement those guidelines within their local areas. The guidelines should also, to the extent possible, be consistent across all federal agencies.

Transportation Goals and Objectives Should Be Linked to Implementation

The projects and programs that are selected should be related to the goals and objectives that are the focus at the beginning of the process. Measurement techniques

that focus on outcomes from transportation funding will be needed to link funding decisions with the effects that are reported.

Modify the Fiscal Constraint Rules

In practice, the uncertainties of project scheduling are difficult to reconcile with a strict funding constraint. As with many issues discussed at the Conference, the participants thought more flexible guidelines could result in a better process and attaining the ISTEA goal for a realistic plan.

Take Advantage of the Innovative Financing Opportunities

There have not been many efforts to use congestion pricing, tolls or other flexible funding arrangements.

Continue the Trend Toward an Inclusive Programming Process

The transportation project and program selection process has included more groups recently; this has precipitated a change in culture and operating rules for all transportation agencies. More input and discussion of transportation issues has changed the way information is developed and presented. Almost all of the underlying assumptions and project information is now available for inspection, and the education process needed to provide a full understanding of this information is critical. State and local agencies find this to be a significant challenge.

Improve the "Workability" of Programming Procedures

The mechanisms governing the developing, administering, and managing of the program were addressed in many areas. Increased flexibility to modify the STIPs and TIPs can make it easier to manage a capital program. A consistent set of regulations and the consistent application will reduce the complexity of programming functions.

Find the Balance Between Air Quality and Mobility Objectives

While these issues are not always mutually exclusive, the discussions concerning programming require some resolution of the relative priority of these two often competing goals.

NEEDS FOR TECHNICAL ASSISTANCE, INFORMATION AND RESEARCH

The Conference participants were encouraged to identify issues or subjects where more information was needed as topics were discussed. These might take the form of better dissemination of existing knowledge, better or more available training classes, or research that develops new procedures or knowledge. The TRB Committee encourages efforts to address these needs. More information on the context of some of these needs is presented in the Proceedings, but the summary below is provided to guide consideration of the range of issues.

Development of New Technical Tools and Methods

- Multimodal evaluation tools that do not require significant data collection.
- Practical, measurable and affordable methods to relate goals to planning and programming results.
- Techniques to measure the impact of non-traditional projects that are part of the funding program.
- Guidelines on applying and communicating risk analysis procedures to transportation project design and decision-making.
- Methods to quantify the broader social costs and implications of transportation projects.
- Development of better financial forecasting techniques.
- Techniques to allocate financial resources to categories or projects.
- Institutional arrangements between and within agencies that are necessary to address a multimodal programming and planning process.
- Project and program tools and databases to manage the programming process.
- Effectiveness of the federal program and the possible federal roles.
- Effectiveness of the Management Systems, and how to integrate them with the planning and programming process.
- Using management systems to help define policies and evaluate strategies.

Technical Assistance and Information Needs

- Better dissemination of information regarding the air quality impacts of transportation control measures.
- Types of innovative financing techniques and non-traditional funding sources.

**Best Practices or Summaries of Experiences
in:**

- Public involvement techniques.
- Multimodal programming.
- Implementing the ISTEA requirements.
- Impacts of ISTEA on the transportation service that is being provided.
- The use of innovative financing arrangements.

▪ The application of management systems that have been implemented (e.g., pavement, bridge) and how have they changed the decision making process.

▪ Communicating technical procedures and models to non-technical audiences.

TRANSPORTATION PLANNING AND PERFORMANCE MEASUREMENT IN WASHINGTON STATE

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INTRODUCTION

Transportation planning has provided information for decision makers for many years. Policy makers have relied on rational, technical methodologies that develop transportation objectives, analyze deficiencies, recommend potential solutions, and monitor transportation system performance. This approach to developing transportation plans and programs has served Washington State well in the past. However, in an era of declining transportation revenues, competing social needs, and heightened public scrutiny of government, transportation planners must rationally assess available revenues to provide fiscal reality to their proposals. Also, decision makers are now demanding implementation plans and regular progress reporting on the performance of their transportation plans and programs. The subject of this paper is to describe the process Washington State used for setting long term transportation priorities in Washington's Transportation Plan and the measures WSDOT is considering for monitoring transportation system performance.

THE PROGRAM AND PRIORITIZATION STUDY (PAPS)

The PAPS study was performed by Washington's Legislative Transportation Committee and was completed in 1993. It addressed the need to provide greater flexibility in priority programming of transportation projects and recommended more formal links between the programming and planning process. The study's major recommendations focused on the highway construction program structure and the process for prioritizing highway projects. The study recommended that the Department of Transportation:

1. Develop a highway system plan and base the programming process on that plan.
2. Restructure and simplify the highway construction program into three major programs (Maintenance, Preservation, and Improvements).
3. Develop prioritization methodologies using cost-benefit criteria for each of the major subprograms.
4. Develop a program trade-off process to allow decision makers (the Transportation Commission) the ability to review alternative highway programs and select the program providing the greatest benefits for the available revenues.

Most of the PAPS recommendations were embodied in revisions to Revised Code of Washington (RCW) 47.05 which was adopted by the 1993 Legislature.

THE STATEWIDE MULTIMODAL TRANSPORTATION PLAN

When the state legislature passed the Growth Management Act (GMA) in 1990, it required local governments to develop financially constrained 20 year comprehensive plans for land use and capital facilities. For transportation, the Act required these to be consistent with each other and with state transportation plans. Ensuring this consistency is a primary role of regional transportation planning organizations, creatures of Washington's GMA.

A separate statute also requires the Washington Transportation Commission to adopt a statewide, multimodal transportation plan (SMTP) for all areas of the state. This plan is to consist of a "state owned" component addressing those facilities owned and operated by the state. It is also to include a "state interest" component which deals with facilities that are owned and operated by others, but are of statewide importance. The SMTP is currently under development.

The WSDOT began developing the first piece of the SMTP, called the Highway System Plan (HSP), in 1991 by creating "service objectives" for state owned facilities (i.e., state highways, state ferries, and state airports) and state interest facilities. These objectives are divided into the major program areas of Maintenance, Operations, Preservation, and Improvements.

The various stages of developing the financially constrained Highway System Plan are depicted in the chart in Figure 1. The "All Needs" circle defines historical planning efforts that were usually not constrained to a revenue level.

The "Special Objective Needs" circle defines a smaller needs level within which deficiencies (and the projects to address them) must meet the appropriate performance measure (called a service objective). The process of setting service objectives excludes what may have historically been considered a "need." For state highways, this "Service Objective Needs" level is about \$30 billion over the next 20 years.

Since available revenues cannot fund the "Service Objective Needs" level over the next 20 years, Washington's Transportation Commission was

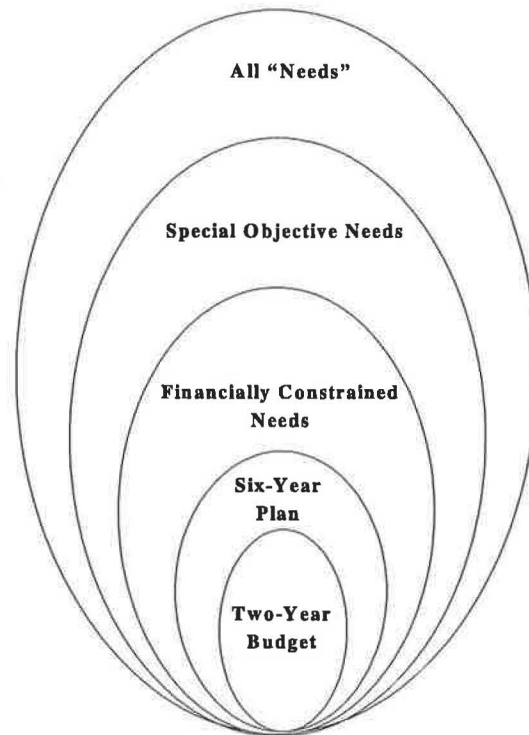


Figure 1. Financially Constraining Washington's Transportation Plan and Programs

required to select a smaller universe of deficiencies, called the "Financially Constrained Needs" level. This was accomplished by prioritizing the service objectives and programs and comparing these priorities to a realistic revenue forecast.

WSDOT staff will begin developing a Six Year Plan starting in January 1996. This will serve as the implementation vehicle for the 20 year transportation plan by identifying the highest priority six year needs. It too will be financially constrained to available revenues. One version of the six year plan will be constrained to "current law" revenues, i.e., those revenues currently authorized. Another version (or several other versions) will be constrained to various enhanced revenue scenarios. This plan will provide options for the Transportation Commission and Legislature to consider in 1997 as they consider a two year transportation budget.

PROGRAMMING PROJECTS FROM THE HIGHWAY SYSTEM PLAN

The foregoing discussion on the changing transportation planning environment describes the broadened scope of the transportation planning process in Washington. This enhanced planning provides substantial additional information to the program development process. At WSDOT, the two

functions were recently combined organizationally to reflect this increased linkage. But the programming process has seen much revision as well. ISTEA increased the level of stakeholder interest in the project programming stage while providing little additional funding. This has increased pressure on agencies to provide more effective investment programs. At WSDOT, that pressure has focused the project prioritization process almost exclusively into a cost-benefit approach.

The program structure of WSDOT's Highway Programs is identical to the Highway System Plan (HSP) format. System plan service objectives provide policy direction for each program. The constrained HSP determines which system deficiencies are eligible for project programming. Biennial investment levels in all programs are based on the 20 year target level and the expenditure plan defined in the HSP. Preservation Program levels and project priorities are developed from the appropriate ISTEA management systems (i.e., pavement and bridge). Improvement Program levels and project priorities are based on available revenues and cost benefit analyses. Each subprogram uses cost-benefit methodologies germane to the specific subprogram.

From the list of benefit-cost prioritized projects, the Transportation Commission selects a mix of projects providing the greatest net benefit to transportation users. This prioritized program is

submitted biennially to the Legislature for funding authorization. The first program developed under a constrained HSP and benefit-cost prioritization methodologies was approved by the legislature in May 1995.

MONITORING TRANSPORTATION SYSTEM PERFORMANCE

Performance of the state's transportation system is like the proverbial "beauty"—it's in the eye of the beholder. Washington's Legislature, Transportation Commission, and Department of Transportation have considered many measures, each with advantages and limitations, to assess performance of the transportation network. Generally, these measures fall into three categories:

1. *Efficiency Performance Measures:* These are usually of the form "output over input" and are intended to measure an agency's products based on the resources afforded it. With one exception, most of WSDOT's efficiency measures are internally reported to advise managers of workforce productivity. One exception is the measure of project benefits and costs (benefit cost ratios) that are used to prioritize projects in many WSDOT programs. These measures of

"funding efficiency" are very helpful in setting budget priorities for highway mobility and safety projects.

2. *Program Delivery Performance Measures:* For transportation construction programs, these are typically measures of contracts awarded on time or variations in project estimates, or percentage of program expended. These indicators are most frequently cited as measures of agency performance, rather than transportation system performance. They have historically been used by WSDOT to report program status to the Transportation Commission and Legislature.

3. *System Performance Measures:* These measures generally describe how the system is performing and are usually more relevant to the transportation customer. Measures of congestion, vehicle collisions, pavement condition, and transit usage fall into this category. Collecting the performance data is occasionally costly and data is usually open to multiple interpretations. Also, changes in data trends are slow to develop, which can frustrate shorter term elected officials.

Each indicator category provides a unique and useful perspective on the many facets of the transportation system and the agencies who deliver transportation services.

CASE STUDIES: DIFFERENT APPROACHES FOR DEFINING PROGRAM GOALS

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INTRODUCTION

More thorough and systematic approaches to capital/maintenance project programming in transportation proceed logically from a more careful consideration of the goals set for these projects. More explicit, quantitative treatment of transportation goals and objectives has, in fact, been pursued in recent years from several different perspectives: as a part of carrying forward the required management systems specified under ISTEA, to enable meaningful system performance monitoring, as a part of goals-directed strategic planning/management, to assist in formalizing the inputs of multiple public agencies and community groups in transportation planning and decision-making, as a basis for strengthening multimodal and intermodal planning, and in other ways.

Experience has shown, however, that, though formal consideration of goals/objectives represents a logical starting point for improved programming procedures, this can be accomplished with varying degrees of completeness.

- In some instances, goals/objectives are only implicitly employed, rather than explicitly treated.
- In many cases, precise quantitative measurement of goal-achievement is not possible; qualitative and judgmental estimates are necessary.
- Competition between goals quickly enters the process, with complex trade-offs of one against another required.
- The number of goals requiring consideration can grow quickly, leading to the development of hierarchies or networks, and associated complexities in defining relationships.
- While goals can clarify the different agendas which multiple participants in planning/programming bring to the table, they can also exacerbate tensions and conflicting points of view.

The purpose of this paper is, through the examination of several examples from highway planning, transit planning, and multimodal planning,¹ to explore the role of more systematic treatment of goals and objectives in improving transportation programming processes. Comparison of these examples quickly shows that there are many different approaches to the topic, and certainly no one can be singled out as "correct."

In fact, connecting to the broader planning/management structure of the agency or agencies involved, and meeting the informational needs of the political decision-making processes which ultimately implement plans and programs, are the major determining factors regarding the "fit" of systematic goals identification. A major theme in comparing the case studies is the extent to which they employ "process-oriented" goals vs "product-oriented" goals. The former mainly address the administrative side of implementing transportation projects, while the latter attempt to bring in the socio-economic/environmental functions, services, and impacts involved.

CONCLUSIONS

As a logical kick-off point for state, regional, and metropolitan transportation programming efforts, more effective and meaningful goal-setting is far from a trivial exercise. As the examples reviewed in this paper show, there are many dimensions by which goal-setting can vary, including number of participants, range of concerns and impacts addressed, complexity by which goals are interrelated, all of the technical and judgmental problems associated with criteria for measuring performance in achieving goals, the manner in which goals and objectives are themselves employed in designing alternatives, and, similarly, the role of goals/objectives/criteria (and associated analysis methodologies) in evaluating alternatives. Many procedural and methodological decisions must be made, explicitly or implicitly, in using a goal-setting process to inaugurate or recycle a transportation programming effort.

A suggested checklist for good goal-setting:

- Reflect the concerns of both *users and non-users* who may be significantly impacted by transportation facility construction/operation.
- As a result, offer as well the opportunity for *interagency and community group participation* in goal setting.
- Consider explicitly the *measures/criteria* which may or should apply in operationalizing goals assessment.
- Depending upon the complexity which emerges, utilize goals/objectives/criteria *hierarchies* as appropriate, to show interrelationships and priorities.

▪ In general, there is an ongoing need to step back from traditional supply-oriented performance measures to ask, "What difference do these measures make to system users?", and to explore supplemental measures and goals that relate more directly to user (and non-user) benefits and costs.

▪ Give particular attention to how *comparative mobility* delivered by alternate modes can/should be defined and measured.

▪ Where *qualitative measures* are indicated, give thought to how and by whom judgmental estimates of service quality/costs/indirect impacts will be made.

▪ At least begin to anticipate implications for the ensuing *process of analysis/forecasting* of the impacts of transportation alternatives.

-Travel demand forecasts

-Indirect impact analyses

-Life cycle cost analysis

-Travel time savings and value of time analyses

▪ Also begin to anticipate the data and judgment needs of the ensuing process of *evaluating transportation alternatives*.

-Assigning relative weights to goals/criteria

-Accommodating conflict and trade-offs among goals and objectives

-Deriving single summary scores, such as cost-effectiveness indices or other cost/performance measures, for alternatives

-Accommodating the substitution of alternative projects at the cost/effectiveness trade-off margin, given that a budget limit has been reached

▪ *There is no single best method for goal-setting*, particularly given the different scales of planning (regional, corridor, project, etc.) and levels of detail at which planning may be done.

▪ *Much discretion consequently remains* to state, regional, and local participants in goal-setting for transportation planning/programming — and effective interaction among participants in achieving this is its own additional benefit.

¹ Nine of the 16 case studies and/or research reviews dealt with multimodal planning examples, six involved transit planning examples, and one addressed highway planning/programming. Three multimodal reviews were drawn from recent TCRP/NCHRP research efforts, four examples involved site-specific regional or state planning, and two involved suggested conceptual approaches. Of transit planning examples, three were of a review nature, two cite a specific example, and one a conceptual approach. A site-specific highway planning example was also included.

ROLE OF ISTEA MANAGEMENT SYSTEMS IN PRIORITY SETTING AND PROGRAM DEVELOPMENT

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MANAGEMENT SYSTEMS

- MnDOT's philosophy of "doing business in a new way" — total quality.
- Three additional systems:
 - Maintenance;
 - Real estate; and
 - Construction.

- Autos
- Commercial
- Buses
- Trains
- Boats
- Networks
 - Air
 - Highway
 - Rail
 - Marine
- Geographic
 - District, MPO, Local
 - State
 - Corridors
 - Location Specific

PERFORMANCE MEASURES

- Tied to the state long range plan goals and objectives.
- Aggregated by transportation delivery context.
 - Modes
 - Aircraft

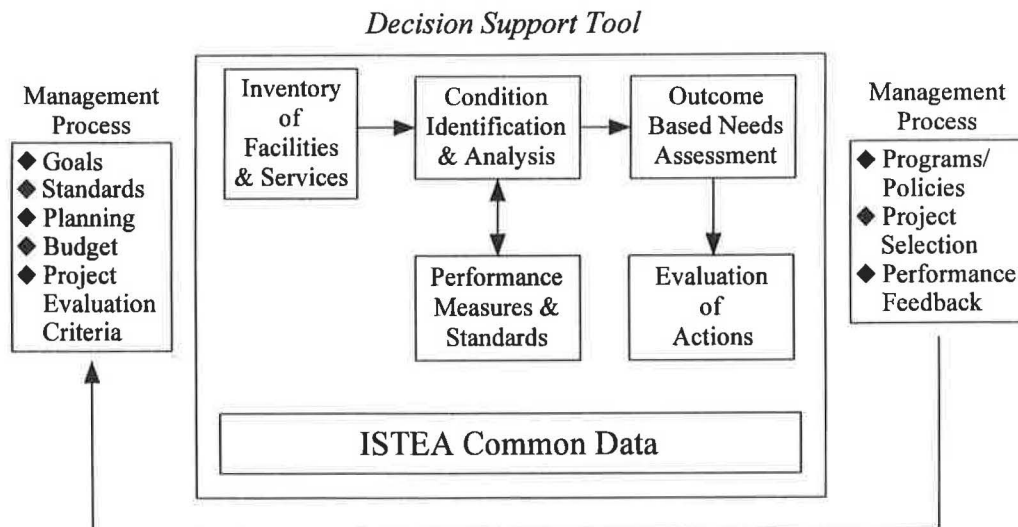


FIGURE 1 Decision support context.

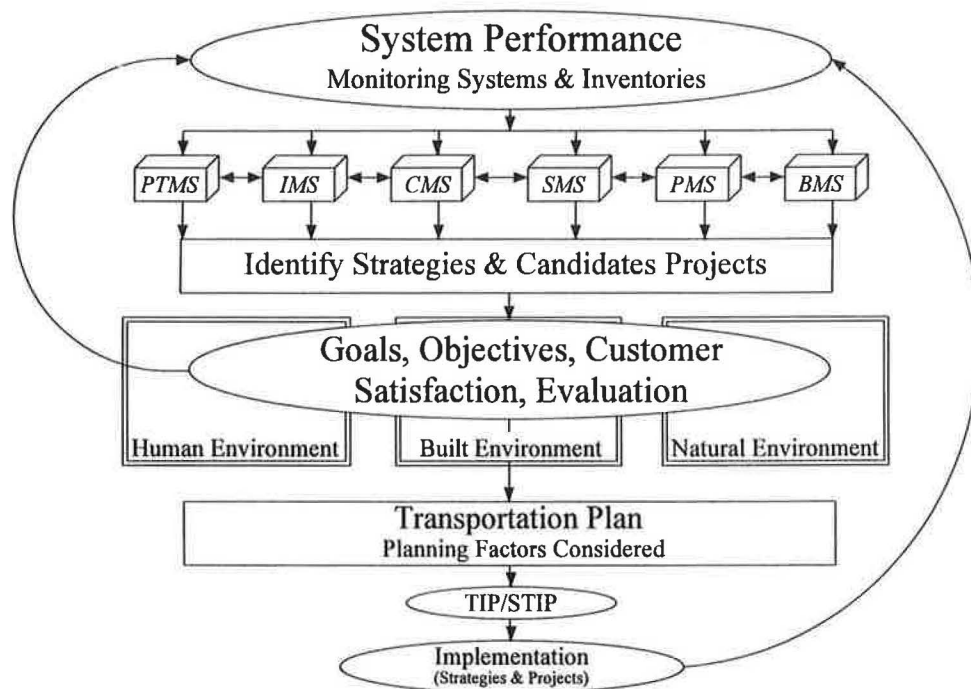


FIGURE 2 System performance.

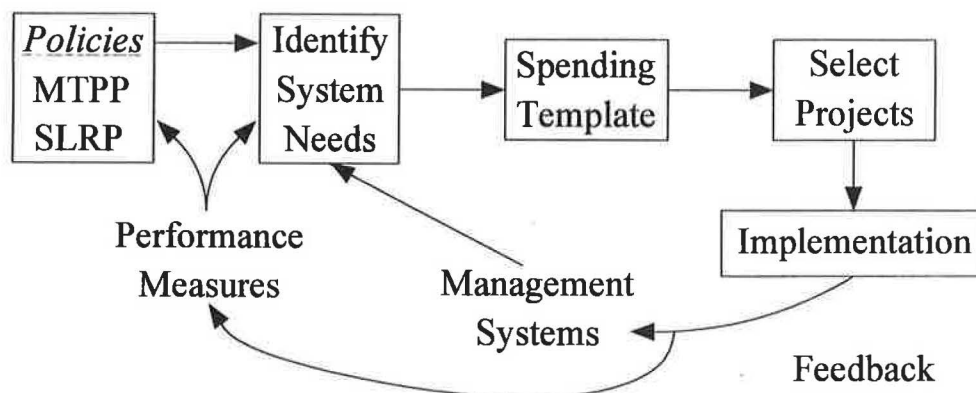


FIGURE 3 Project programming vision.

STATEWIDE PLANNING AS A FRAMEWORK FOR PROGRAMMING DECISIONS

James L. Covil
Wilbur Smith Associates

The main focus of this presentation was to report results of several surveys of statewide planning activities which provide a framework for programming decisions. Two of the surveys were undertaken by Wilbur Smith Associates on behalf of the U.S. DOT Office of the Secretary and relate to the National Transportation System. Two other surveys were undertaken for the Federal Highway Administration in connection with a Synthesis of Statewide Planning Practices and the development of a training course on statewide planning. The presentation contains only selected portions of the four projects.

The statewide transportation plans developed under provisions of ISTEA have, by their very nature, significant policy content which influences the type of transportation programs developed. Almost without exception, these statewide transportation plans define goals and objectives, some of which are a bit vague while others are more specific. In addition, some of the plans set forth strategies as a means of achieving these goals and objectives. In a limited number of cases, system plans are included which also set a policy type context for programming decisions.

Despite the general similarity in approach, the synthesis work undertaken by Wilbur Smith Associates has shown that there are significant variations in the way individual states presented goals and objectives in their statewide plans. This primarily deals with the level of detail. Some states have limited themselves to a very few goals statements (for instance, one state only has four goal statements). On the other end of the spectrum, considerable detail is presented in certain cases (one state included 31 individual goal statements).

Another variation relates to the structure of policy statements presented in the statewide plan. While a few states only adopted goal and objective statements, others chose to become even more specific by identifying the strategies and actions steps they intended to undertake regarding each objective. This approach has significant implications for a structured performance monitoring process.

There are some consistent themes that appear in the goals and objectives of statewide transportation plans. These themes include economic development, safety, environment, system preservation, intermodal efficiency, and multimodal alternatives. A number of other topics also received significant attention such as energy, mobility, congestion, new technologies, public/private partnerships, and land use/trans-

portation interactions. These goals should be reflected in the programming decisions of the state transportation agencies.

Another aspect of statewide transportation plans that has implications for programming relates to the systems planning activities undertaken as a part of this process. Some of these systems planning activities dealt with service standards, system designation, corridor needs, system needs, and finance. For instance, Florida included in its plan a policy regarding a maximum number of through lanes on the State Highway System. Ohio included the designation of macro corridors and hubs in the Access Ohio plan. Idaho is an example in which system needs were tabulated in dollar amounts. South Carolina also undertook a needs study approach as one element and tied this to a financing proposal that covers highways and transit.

Another aspect of statewide transportation planning relates to performance monitoring. The surveys undertaken regarding this aspect clearly show a wide range of different opinions about what the states intend to achieve with performance monitoring. Nevertheless, there is a general intent in many plans to use performance monitoring as a means of understanding how well the system is performing as well as determining how well the choices made in the programming process are affecting goal achievement. The surveys also found that program delivery issues were a significant aspect in some states' performance monitoring approaches. Typically, the state transportation agencies include program delivery issues in response to outside influences relating to the efficiency of departmental operations. On the other hand, others see program delivery issues as more appropriate for an agency's strategic planning process rather than a systems performance assessment.

The state-of-the-practice regarding performance measurement is quite varied. While almost all states use system condition indicators, very few have tied performance measures to the goals they set for their transportation systems. Nevertheless, there are some examples where this approach is being taken. Florida is one such state where the performance measures are linked to goals identified in the transportation plan and are primarily outcome based (as contrasted with output measures). Another example is Ohio whose process embodies four tiers or elements. The first tier relates to the issue being addressed, the second relates to the measures of performance, the third tier relates

to performance standards (including gradations of performance), and finally a scoring system that defines how difficult it would be to overcome the problem.

It has been said that if we keep doing things the same old way, we will end up with the same old problems. These surveys of state transportation planning processes lead to the conclusion that we are making significant progress in improving the way we go about our business. Most important, we seem to be focusing more than ever before upon the outcomes of our planning and programming process. The overall

conclusion is that statewide planning activities provide an excellent context for programming decisions. In turn, those programming decisions affect the performance of the transportation system and the achievement of objectives included in the plan. With this as a guiding principle, there are a variety of statewide planning approaches from which states can carefully select those which are most appropriate for the times and circumstances in which the planning and programming activities are undertaken.

RISK ANALYSIS AS A TOOL FOR MAKING BENEFIT/COST WORK IN AN ENVIRONMENT OF CONFLICT

David Lewis
Hickling Lewis Brod Inc.

WHAT CAN RISK ANALYSIS DO?

- Quantify risk and uncertainty in evaluating and comparing alternative strategies;
- Involve stakeholders and experts in finding consensus; and
- Facilitate the quantification of issues that traditionally have only been addressed qualitatively.

MITIGATING CONFLICT WITH RISK ANALYSIS

- Choice conflict.
 - Project and program prioritization
 - Allocation of limited resources
- Financial conflict.
 - Financial viability of major public investments
 - Financing
- Procurement conflict.
 - Products
 - Contracts/risk sharing

RISK ANALYSIS—A FOUR STEP PROCESS

1. Identify the structure and logic of the forecasting problem—*tangible, intangible*.
2. Quantify forecasting assumptions—*probability, objective, subjective*.
3. Facilitate scrutiny and consensus—*management, stakeholders*
4. Decisions—*strategic planning, resource allocation, timing*

THE FUTURE OF FORECASTING: RISK ANALYSIS AS A PHILOSOPHY OF TRANSPORTATION PLANNING

(Summarized from TR News 177, March-April 1995)

Decision-support efforts for infrastructure development take place in an arena where the exposure of risk can be more constructive than the search for certainty. Forecasting in all fields today means accommodating a paradox of planning in an informed society, namely that the quest for certainty can foster indecision, whereas the exposure of doubt can promote resolution and action.

Risk Analysis as a Philosophy of Decision

Risk analysis includes a family of forecasting techniques and planning processes used to (a) examine risk and uncertainty in alternative courses of action and (b) achieve public consensus. The forecasting techniques seek to distinguish the probable from the improbable implications of infrastructure investments, including their transportation, social and economic, environmental, and fiscal consequences. The planning processes capitalize on contemporary methods of group dynamics to promote consensus, find win-win community-government compromise, and ensure timely action on sound investments.

Why Conventional Decision-Support Remedies Fail

Conventional forecasting methods often fuel mistrust by appealing to counterintuitive or mechanical notions of uncertainty. Four examples stand out.

- *What if.* The what-if questions are rarely the kind that impart any genuine insight. Consider the common practice of developing best- and worst-case or high and low scenarios. The flaw is the failure to identify the probability of the alternative outcomes.

- *Doomsday or Utopia.* Another flaw is the belief that all forecasting assumptions (income growth, mode choice elasticities, values of time, and so on) will deviate from expectations in the same direction to manufacture the high and low or best- and worst-case outcomes. In reality the likelihood that all forecast assumptions will err simultaneously in the same direction is as remote as everything turning out exactly as expected.

- *Insensitive Sensitivity.* In another standard procedure known as sensitivity analysis, forecast assumptions are varied one at a time and the resulting changes in projected outcomes are reported accordingly. A problem here is that assumptions and judgments are typically varied by arbitrary amounts instead of by reference to reasoned analysis of potential error. Any measured shifts in the bottom line are thus impossible to interpret meaningfully.

- *Risks Prowl in Packs.* The most fundamental problem is that in the real world assumptions do not veer from expected outcomes one at a time. It is the

prospective result of simultaneous variation in all assumptions that mirrors reality and provides true perspective on the effects of any planning action.

How Risk Analysis Succeeds

Three factors underpin a sound risk analysis process: organizing the planning process for flexibility and consensus, blending the subjective beliefs of stakeholders with the scientific knowledge of experts, and accounting for simultaneously occurring risks.

Organizing for Flexibility and Consensus

Although the public participation literature has long proclaimed the importance of openness and flexibility in the transportation planning process, until now the principle has not been extended to the technical domain, such as the choice of demand forecasting models, estimation of statistical relationships, application of economic assumptions, calibration of engineering algorithms, and so on. In an educated and informed society this is the level at which the seeds of perpetual conflict are sown. To address this problem, the structure of risk analysis unlocks three doors to the technical and scientific aspects of planning.

- Choice and use of planning models,
- Choice and use of technical assumptions, and
- Exposition of results for decision and action.

The first stage of risk analysis involves identification of the result variables (such as traffic demand estimates, the social rate of return, and environmental costs), their suspected causal factors, and the nature of the relationships that link them. Because these elements are common to all forecasting efforts, existing models are easily accommodated and incorporated into a risk analysis process.

In the second stage of risk analysis, the structure and logic diagrams serve to facilitate panel sessions organized to elicit expert and stakeholder beliefs about the effects of causal factors, their uncertainty, and the nature of the relationships that link them to results. For each causal variable and interrelationship identified in the model, panelists provide ranges, or probability distributions, that characterize uncertainty about them. To those unfamiliar with probability and statistics, this task may sound onerous. However new techniques and software programs are designed specifically to make the application of probability analysis accessible and user friendly.

The third stage of risk analysis involves the generation of results for use in decision making by entering the probability values developed in the second

stage in the model formulated in the first stage. Technically the result of a risk analysis is a quantitative statement of the probability that an investment will yield a desirable outcome and of the risk that it will not. Computer simulation is used to generate thousands of possible results by allowing all causal factors and relationships to vary simultaneously according to their estimated probability distributions. The frequency with which various outcomes occur and recur forms a probability distribution, or risk analysis, or a project's economic, social, transportation, and environmental consequences.

Philosophically the presentation of a risk analysis differs markedly from traditional modes of forecasting. In particular there is no presumption of a best or most accurate forecast. Instead the whole range of conceivable outcomes is arrayed, together with the estimated probability of each occurring.

Risk analysis changes the way analytic work is portrayed as a basis for consideration by decision makers. It is not characterized as the work of professional analysts, but instead as a broadly based consensus rooted in the community at large. Gone is the presumption that it is for analysts to establish what level of risk a decision maker ought to tolerate. Gone in particular is the convention of presenting the central-case forecast—the outcome with a 50 percent likelihood of being wrong in either direction—as the best quantitative measure for decisions.

Blending Objective and Subjective Data

Each factor identified in a structure and logic forecasting model is assigned a numerical range of possible outcomes, and all possible outcomes within the range are assigned a probability of actually occurring. The result is a probability distribution for each factor. Combining these probability distributions reveals the probable, less probable, and improbable effects of a project, including demand, congestion, social and economic impacts, and environmental consequences.

Where do the judgments about probability come from? The starting point is empirical data gathered in the second stage from which initial risk markers are deduced.

Although the procedure described will be recognized as the standard objective approach to probability, it is only the beginning of an effective risk analysis process. Of equal importance is the subjective approach, which holds that the probability of an event is the degree of belief sustained by an informed person or group of stakeholders that it will occur. The use of subjective probability in risk analysis blends the subjective beliefs of stakeholders with the objective, scientific knowledge of experts.

Infrastructure proposals invoke at every juncture subjective convictions, and it is thus not surprising that the subjective approach to probability in risk analysis has proven itself an appealing and effective consensus-building tool.

In practice, the blending process begins with the assembly of an appropriate panel of subject-matter experts and stakeholder representatives.

A key attribute of the risk analysis process is that stakeholders are never drawn into a debate about who is right and who is wrong. Extreme views may be assigned lower probabilities, but this is wholly different from impugning an individual's view as being unworthy of consideration. Special interest groups will often present technical arguments that differ sharply from the mainstream but are not provably incorrect. Yet in dismissing one view while accepting another, traditional forecasting approaches foster polarization and encourage divisive and unproductive debate. Risk analysis, on the other hand, embraces virtually any

reasoned view, albeit with different degrees of probability. Experience demonstrates that the process results in consensus not because of clever group manipulation, but because of its authenticity in dealing with the realities of uncertainty in engineering, environmental science, and economic theories.

Conclusion

Most people believe that the only sure thing about a forecast is that it will be wrong. So it goes in decision support for infrastructure planning. Shifting the debate from "your crystal ball versus mine"—an argument innately unwinnable and endlessly debatable—to matters of the probable and possible allows the debate to shift from unproductive technical controversy to policy, compromise, and action. Risk analysis facilitates that shift.

NEGOTIATED CAPITAL PROGRAMMING IN NEW JERSEY

Mark L. Stout

New Jersey Department of Transportation

The process of capital programming in any state or urbanized area must necessarily reflect the history, geography, governmental organization, and political culture of the area as well as its transportation needs. To understand how New Jersey's brand of capital programming came into being, it is necessary to understand something about the state. Some of the most important factors are:

1. New Jersey is an urbanized state, the most densely populated in the nation.

2. Because of the state's population density and the dispersed character of employment, transportation is a major issue and a major topic of discussion among citizens, in the newspapers, and in political circles.

3. New Jersey has a strong, centralized Department of Transportation (NJDOT).

4. New Jersey has a statewide transit agency, the New Jersey Transit Corporation (NJ Transit), which operates the great majority of public transportation services in the state, including an extensive commuter rail system and both commuter and transit-type buses. Although established as an independent public corporation, NJ Transit has the Commissioner of Transportation as its chairman.

5. New Jersey is entirely divided up into three metropolitan planning organization areas.

6. New Jersey has a large 100% state funded transportation capital program. This is due in part to a large Transportation Trust Fund and in part to New Jersey's use of the "soft match" provision of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

7. Most of the state is classified as a severe air quality "nonattainment" area.

8. NJDOT has historically been the project sponsor of federal-aid projects on local roadways.

9. NJDOT has consistently advocated and implemented a philosophy of flexibility in the use of available funding sources. NJDOT has also resisted the concept of rigid division of funding categories into "MPO" and "state" categories, pursuing the philosophy that the objective of the programming process is an agreed upon capital program and that reaching that objective may require negotiations concerning a variety of funding categories.

As is probably the case in most states, New Jersey's capital programming process has been in a state of constant evaluation since the passage of

ISTEA. No year's experience has been quite like the one that preceded it or followed it. This paper will describe the process as it occurred in one capital programming round, the development of the Fiscal 1996-Fiscal 2000 regional Transportation Improvement Programs and Statewide Transportation Improvement Program. To maintain a reasonable focus, this account will refer mainly to the process of negotiating a TIP with the state's largest MPO, the North Jersey Transportation Planning Authority.

The process as it occurred from the fall of 1994 through the summer of 1995 can be discussed under three basic phases: *screening*, *prioritization*, and *negotiation*.

The NJDOT project *screening* process for the FY 96 capital programming round began on September 1, 1994. The screening process is used to determine which projects are candidates to be included in the TIP and what the schedules, scope of work, and costs of those projects are. The screening process was developed at NJDOT about three years ago as a way of improving the reliability of capital programs through rigorous scrutiny of project status. Both NJDOT and the MPOs had agreed, independent of federal legislation, that TIPs should be restricted to real, deliverable projects with high likelihood of implementation according to projected schedules and costs. The threshold for "graduation" from Study and Development to TIP was defined as approval of the basic environmental document. The normal rule for entry into the TIP is that the environmental document be approved at the *beginning* of the fiscal year for which TIP entry for final design is sought.

The screening process begins with circulation of a draft "project pool" consisting of all projects identified by capital programming staff as likely TIP candidates. These are mainly projects continued from the previous TIP, together with projects which appear to be likely to "graduate" from Study and Development. In the autumn of 1994, project managers were asked to send back updated schedules and costs, together with any additions to the pool they wished to put forward. The draft project pool listings were then reviewed at four screening meetings in late September, organized around the four NJDOT geographical regions. Beginning in 1993, MPO staff has also attended these meetings. Inclusion of non-NJDOT staff in these meetings reflects a real cultural change in the department toward more open decision making.

At the screening meetings, projects are reviewed one at a time. Each project manager is asked for key milestone dates and information concerning project delays and unresolved problems. These are cross-checked with staff from specialized project support units, particularly environmental and right-of-way. Although the meetings are conducted in an informal and—usually—friendly manner, there is a good deal of give-and-take and frank discussion of project problems. It is not uncommon, for instance, for project managers to have a rosier view of project schedules than specialized supporting staff does. Decisions are normally made on the spot as to (1) which projects are really “Tippable” and which must remain on the Study and Development list and (2) what are the most reasonable schedule years for programming for final design, right-of-way acquisition, and construction.

The work product of these screening meetings and the follow-up research that follows them is a “revised project pool” which lists all NJDOT project which are considered eligible for the TIP, together with their best, reasonable schedules and cost estimates. In the FY 96 round, the revised project pool was shared with the state's three MPOs in late November in hard copy reports and on disk as a database file.

Similar screening procedures are carried out by NJ Transit and by each of the three MPOs, for local sponsorship projects. The information contained in the NJDOT project pool has rarely if ever been challenged by the MPOs, in large part because of the obvious rigor and openness of the process.

The *prioritization* process begins with delivery of the revised project pool. Each of the three MPOs has its own prioritization system. The NJTPA “Project Selection Criteria and Methodology,” as used in the FY 96 programming round, consisted of quantifiable performance standards established to measure each of the six goals from the draft long-range plan. The project ranking system assigns a numeric point value to each potential project based on the degree to which it satisfies the various criteria. Much of the scoring is done using automated databases that provide information on such items as pavement ratings, bridge sufficiency ratings, project location, VMT generation, and truck traffic. The result of the process was a set of prioritized project lists.

NJDOT also has a project prioritization methodology. This methodology is used as a staff tool for evaluating projects and helping to put together a draft program. It is clearly and explicitly used as a staff tool only and not as a final decision maker. The NJDOT system is keyed to project types, based on the belief that comparing, say, bridge projects to highway widenings using quantitative methods is not useful. For some classes of projects, priority analysis is used sparingly or not at all. For another class of projects—those termed “highway operational

improvements”—priority analysis proved very helpful. Projects classified as highway operational improvements are mainly low-cost improvements aimed at relieving bottlenecks or improving operations on the state highway system.

The next product that NJDOT prepared for MPOs, however, was not a project list but a draft program. NJDOT capital programming staff prepared a draft program based on a number of factors, including:

1. *State policies and objectives.* Since adoption of the 1989 long-range plan, NJDOT had embraced a resource allocation strategy based on the plan's long-term goals. The heart of this strategy is to give priority to system preservation projects over system expansion projects. This strategy was often looked to to guide project selection decisions.

2. *Project priorities.* As also discussed above, within certain categories individual project priority analysis data was used to select projects to be deferred. Both NJDOT and MPO priority scores were examined, and projects with consensus low scores were liable for deferral.

3. *Construction timing needs.* Capital programming staff looked to construction management staff for guidance as to which projects could not be safely deferred, which projects should be deferred to avoid unnecessary maintenance of traffic problems because of conflicts with other projects, and which projects should be deferred or held to their schedule for orderly sequencing of projects in a corridor.

4. *Department commitments.* In the course of doing business in a democratic political system, the Governor, the Commissioner of Transportation, and department executives sometimes make commitments to project schedules to state legislators, citizens groups, and others. These commitments need to be honored.

5. *Funding categories.* NJDOT staff matches funding categories to projects to meet several objectives including use of federal demonstration funds, addressing federal backlogs, and those with special constituencies or review agencies.

When the internal staff and management reviews were done, NJDOT presented to the MPOs on January 30 a fully constrained “staff working draft” five-year program, with funding categories, for FY 96 through FY 2000. This constituted a *proposed* capital program, subject to further review and negotiation. The project pool which had emerged from the screening process was moderately beyond anticipated resources for the first year (FY 96), substantially beyond resources in the second and third years, and well below resources in the fourth and fifth years.

The phase of *negotiations* began with delivery of the staff working draft program to the MPOs on January 26, 1995. NJDOT, the three MPOs, and NJ

Transit had previously agreed to a very tight timetable for these negotiations because of the increasing complexity of air quality analyses and reviews. The other scheduling factor that needed to be considered was the state approval process. Under New Jersey law, the Legislature not only approves the annual capital program, it actually incorporates each project as an appropriations item in the budget.

NJTPA, as the largest MPO, had meanwhile established a structure for carrying on negotiations. For the new (FY 96) round, the MPO established a committee of the policy board which was specifically empowered to prepare a draft TIP for board approval, including conducting whatever negotiations were required with NJDOT and other project sponsors.

The committee held its first meeting on February 6. At that point, MPO staff reported the results of their comparison of the NJDOT "staff working draft" with the MPO priority list and reported that the two were "over 98%" in agreement. This large measure of congruence was due in part to a large degree of consistency between NJDOT and MPO priorities and in part to the fact that NJDOT staff took MPO priorities into consideration in preparing the draft program. A large factor in reducing potential conflicts, however, was the fact that the annual state Transportation Trust Fund appropriation was planned to increase from \$565 million to \$880 million annually.

There were, nonetheless, some significant differences—projects which received high priority scores in the MPO rating system but which had been delayed from their project pool year in favor of other projects in the NJDOT draft.

As a result of further negotiations, and similar ones involving the state's other two MPOs, the proposed annual capital program which was submitted to the Legislature on March 1 carried the endorsement that it was ". . . the product of extensive deliberations and outreach . . ." The draft TIPs prepared by the MPOs used the same basic project list.

It will be recalled that the scheduling information used to draw up the project pool, which in turn was used to negotiate the project lists, had been developed the previous October. Both the MPOs and NJDOT realized that a more comprehensive review was needed to avoid having a "stale" TIP adopted. The mechanism that was agreed to was a "midcourse correction" review in April.

As events unfolded, an additional review proved to be needed. In enacting amendments to the state's Trust Fund Act, the Legislature established an annual appropriations level of \$700 million from the Trust Fund rather than the \$880 million the Governor had requested. Given the late date, it was determined to be too late to reopen TIP negotiations or to consider the federal-aid side of the program at all. Accordingly, all the reductions had to be taken on the state side. Most of these involved statewide program-type expenditures rather than specific construction projects.

All the major parties to the capital program process appeared to be satisfied that the process had been successful and that the program that emerged was a product of full and open participation by the major actors, full use of both technical and policy information, and solid, businesslike scheduling.

PIMA ASSOCIATION OF GOVERNMENTS TRANSPORTATION IMPROVEMENT PROGRAM: PROPOSED ROADWAY PROJECT ASSESSMENT AND PRIORITIZATION PROCEDURE

James W. Glock

City of Tucson

Report prepared by JHK and Associates

INTRODUCTION

This document provides a summary description of the proposed roadway project scoring procedure developed for the Pima Association of Governments Transportation Improvement Program (PAG TIP) project prioritization process. The PAG TIP Subcommittee, consisting of representatives from PAG, the City of Tucson, the City of South Tucson, the Towns of Marana, Oro Valley, and Sahuarita, Pima County, and the Arizona Department of Transportation (ADOT), has been involved in the development of the project prioritization procedure. With the assistance of the consulting firm JHK & Associates and interested members of the public, the Subcommittee selected screening criteria and roadway project evaluation criteria, established criteria weightings, established a project scoring procedure, and developed a cost-effectiveness index for roadway project ranking. The prioritization procedure was developed over the months of May through October 1995, and was tested on two recently-completed local roadway projects used as case studies. The proposed procedure is intended to be flexible and to evolve over time through the aid of public input.

The overall scoring procedure is a three-step process, consisting of 1) evaluation of projects by local jurisdictions against seven initial screening criteria and scoring of projects using criteria contained within 14 separate criteria categories; 2) review of project evaluations by PAG Transportation Planning Division staff and the TIP Subcommittee and evaluation of the cost-effectiveness of the project; and 3) assessment of the overall jurisdictional, geographic, project type, and modal program balance represented by the prioritized projects. This project involved the development of the overall framework for the procedure and the detailed elements of the first two process steps. The third step of the prioritization procedure is under development by PAGTPD staff and the TIP Subcommittee, and is presented in an initial draft form in this document. This third step (Program Balance) will be refined and completed by PAGTPD staff and the TIP Subcommittee at a later date.

PRIORITIZATION PROCESS GOALS AND OBJECTIVES

The TIP Subcommittee developed a list of 17 goals and objectives, 7 of which were agreed upon by the Subcommittee as applying directly to the TIP Project prioritization process. The remaining 10 goals and objectives were considered by the Subcommittee to be more applicable to the development and implementation of the PAG Metropolitan Transportation Plan (MTP).

PROPOSED ROADWAY PROJECT PRIORITIZATION PROCEDURE

The proposed prioritization procedure consists of three steps to be performed in part by local agency staff and by the TIP Subcommittee. These are:

- Step 1—Local agencies screen projects to determine whether or not they are considered eligible for funding under any one of the three identified funding sources and are eligible for inclusion in the TIP. Projects that pass this initial screen advance in the evaluation process. Local agencies will then evaluate and rate each project based on the scoring criteria. These criteria and scoring system serve as a surrogate estimate of overall project benefits.

- Step 2—PAGTPD staff and the TIP Subcommittee review the project evaluations from Step 1 and submit questions to local agencies as well as provide clarification on evaluation issues where necessary. Project evaluations may be revised and resubmitted to the TIP Subcommittee for a second evaluation by the Subcommittee. The TIP Subcommittee then computes the cost-effectiveness index (CEI) for each project, and ranks projects by project type based on the CEI.

- Step 3—The TIP Subcommittee assesses the results of the CEI rankings, the overall geographical and project program balance needs of the region and the level of funds available, and establishes the distribution of funds to the candidate projects.

The project sponsor must provide all documentation required to support the project evaluation in Step 1 and provide the data required to compute the CEI in Step 2. Questions or issues that arise during the Step 2 review process concerning the results of Step 1 will be submitted to the project sponsor by PAGTPD for a response. The details of how this review will be conducted will be developed by the TIP Subcommittee at a later time.

The final step for reviewing the overall project evaluations/rankings (Step 3), which includes consideration of the program balance of the TIP and the distribution of project funds, is currently under development by PAGTPD staff and will be finalized by PAGTPD and the TIP Subcommittee at a later date.

CONCLUSION

The TIP prioritization process will continue to evolve and be refined in response to its use, performance, and changing public values and needs.

One aspect for use in fine-tuning the process will be the results of continued efforts to obtain public input on the weight or importance of the many factors contributing to a desirable project. The ability to respond to changing public perceptions as to what is important about transportation projects will define the projects' benefits and thus, the projects' ultimate scores for ranking purposes.

While the general public perceptions as to the importance of overall factors may vary, the technical experience needed for input into the process will continue to be obtained through participation as part of TIP Subcommittee meetings, which are open to public involvement. Agenda and meeting materials are provided to all TIP Subcommittee members and all interested members of the public upon request. The

TIP Subcommittee mailings are currently distributed to 12 interested parties.

As part of the continued development of the TIP prioritization procedure, methods will be established to help measure how well the procedure is working. Measures of how well the projects are accepted by the public and policy makers, as well as how effectively the projects are implemented, will be important in the refinement of the procedure. A preliminary listing of measures which may be used to estimate the effectiveness of the procedure is provided below.

A variety of questions may be posed to determine how the prioritization process is working. Such questions might include but not be limited to:

1. *Project Acceptability*

- Did the projects selected through this process have public and political support?
- Was there general understanding of how project selections were made?
- Were there any jurisdictional appeals or protests of the selections made?

2. *Project Viability*

- Did funds obligate and/or project start within the year programmed?
- Was the project completed on time?
- Was the project cost at time of bid within 10% of original program estimate?
- Was the project cost at time of completion within 10% of project bid?
- Were there cost savings realized?
- How many change orders were there?
- Was the scope of the project adequate?
- Was additional work required to meet the actual needs?
- Was utilization (person trips, person-miles, or some other measure) included in the project selection criteria?

TRANSPORTATION PROGRAMMING PROCESS IN KANSAS

Debra L. Miller
Kansas Department of Transportation

BACKGROUND ON KANSAS

- Population - 2,477,574 (32nd in the United States)
 - Urbanized - 1,018,604
 - Rural and Small Urban - 1,458,970
- Land Area - 81,823 Sq. miles (13th)
- Public Roads - 133,276 miles (4th)
- State Highway System - 9,602 miles
- Rail Miles - 6,821 miles (4th)

DIVISION OF RESPONSIBILITIES WITH PARTNERS

- Negotiated agreement on apportionment splits with:
 - Counties—KDOT
 - Cities—MPO
- Proportional distribution of obligation authority
- Each partner is responsible for project selection
- Selected projects included in STIP

DESCRIPTION OF CITY/COUNTY PROCESS

- Counties receive a formula-based share
- Cities
 - 200,000+ suballocated funds
 - 50,000-200,000 based on population
 - 15,000-50,000 managed as a pool
 - 5,000-15,000 managed as pool

DESCRIPTION OF MPO PROCESS

- TIP Selection Committee
 - Public Works
 - Planners
 - Engineers
- Select projects 3 to 5 years in advance
- Develop TIP
- Submit TIP to the State

STATE HIGHWAY SYSTEM CONSTRUCTION PROGRAM CATEGORIES

- Substantial Maintenance
 - Non-interstate resurfacing
 - Contract maintenance

- Interstate resurfacing
- K-LINK resurfacing
- Safety projects
- Emergency repair
- Bridge repair
- Culvert repair
- Bridge painting
- Signing overlay
- Pavement marking
- Major Modification
 - Interstate:
 - Roadway
 - Associated bridges
 - Non-interstate:
 - Roadway
 - Associated bridges
 - Economic development
 - Geometric improvement
 - Railroad/highway crossing
 - Railroad grade separations
 - Hazard elimination (HES)
 - Guard fence upgrades
- Priority Bridge
 - Bridge replacement/rehabilitation
 - Bridge deck replacement
 - Culvert-bridge

CONSTRUCTION PROGRAM DETERMINATION

- Road/Bridge data collected throughout year.
- Priority formulas.
- Project scopes.
- Project cost estimates.
- Determine available funding.
- Select projects.
- Program Review Committee.

PUBLIC INVOLVEMENT

- Public comment on process.
- Long-range Transportation Plan.
- Published program document.
- Public involvement forums.
- Project specific information meetings and hearings.
- Legislative oversight.
- "Selection Process" feedback.

PROGRAMMING IN KANSAS PRO SIDE

- Insulates project selection from politics.
- Credibility
 - Deliver what we promise
- Reflects needs — not “squeaky wheel” syndrome

PROGRAMMING IN KANSAS CON SIDE

- Limits “outside the box” thinking.
- Difficult for public to comment on process.
- Role of public involvement.

1995 MULTIMODAL PROJECT APPLICATION FOR SURFACE TRANSPORTATION PROGRAM FUNDS

David Murray
Metropolitan Transportation Commission

INTRODUCTION

Overview

Following this introduction is an application form for available funds which provides the means for evaluating project proposals. There are two versions of the application—a “self-scoring” version, and a shorter version, called the “Multimodal EZ” form.

Use of the self-scoring application is recommended because it allows the project sponsor to make the best case for a project. Nonetheless, an “EZ version” of the multimodal application is added as Appendix A. This is an *alternative* to the longer self-scoring version; i.e., if you complete the self-scoring version, don't complete the EZ version in Appendix A. The EZ version is intended for use by those sponsors which do not have the staff time to complete the longer version. If an EZ version application is submitted to the CMA, it will be scored using the ranking criteria embodied in the longer version.

Eligibility

The following types of projects are eligible for Surface Transportation Program (STP) funds.

- Highway projects (including construction of HOV lanes, interchange improvements, safety, and operational improvements, and rehabilitation).
- Roadway projects on routes classified as urban major collectors or larger (including resurfacing and reconstruction signalization, striping, bus turnouts, safety and operational improvements, park-and-ride lots).
- Transit projects (including vehicles, equipment, maintenance facilities).
- Bike and pedestrian projects (including paths, sidewalks, and bike lockers).
- Freight/Port projects (including roadway improvements and intermodal transfer facilities).

Evaluation Criteria

Before projects are scored, they must pass a set of threshold screening criteria. The screening criteria are brief and straightforward. They require that the

project come from adopted local/regional plans, be financially viable, and be ready to go.

Projects will be ranked according to the scoring criteria and the program will be derived from the ranked list. The score of a project is the sum of the scores it receives in each of the scoring criteria elements. The scoring criteria reward projects that:

- Repair the existing transportation system,
- Improve safety,
- Lessen congestion,
- Improve the economy and the movement of freight,
- Improve air quality,
- Coordinate transportation facilities with land use,
- Encourage energy conservation,
- Improve access for travelers with disabilities, and
- Increase the efficiency and productivity of the transportation system.

Projects are ranked in score order. Commission priorities, equity and distributional rules may affect the final adopted program.

Programming Rules and Criteria

The 1995 multimodal programming cycles will program regional STP funds for the first two years of the anticipated reauthorization of the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Program.

Fifty percent (50%) of the total regional STP funds will be made available to each CMA, in an amount proportional to its relative population, for programming by the CMA for purposes consistent with ISTEA and subject to the Screening Criteria. The remainder of regional STP funds will be programmed in accordance with the procedures and Scoring Criteria set forth in this application.

MTC shall program projects to each county in an amount equal to no less than 85% and no more than 115% of each county's population share of total regional STP funds over the entire reauthorization period.

All new STP projects programmed in the FY 1997 TIP must be obligated by September 30, 1999.

Detailed Programming Criteria, as well as rules for amending the regional STP program and extending a project's obligation deadline, are contained in Appendix B to MTC Resolution No. 2835.

Process

The process is a cooperative procedure, organized by MTC, but established jointly by a wider transportation partnership, including Bay Area cities, counties, transit agencies, state and federal transportation and environmental agencies, freight interests, community and bicycle groups, and members of the public.

Regional Projects

Non-regional projects must be endorsed by the CMA in its bid list or in its set of guarantee projects. Regional projects do not need CMA endorsement and can be carried forward in the process by MTC. A regional project must meet the following definition:

1A. Benefit: Fifty percent (50%) of the users (beneficiaries) of the project reside outside the county in which the project is located, and

1B. Impact: The project must be a key, regionally-significant facility. It must meet certain threshold lines, in terms of interregional travel volumes.

2. MTC may determine that a project is a regional project based on its key importance in a major corridor, as identified in the *Regional Transportation Plan* (RTP). (This may include a reliever project in a regionally significant corridor as identified in the RTP).

Planning Multiplier

The program is designed to give higher weight to projects with immediate transportation impacts over pure planning studies. To implement this concept, a planning multiplier is used in calculating the total project score.

All planning projects are first evaluated as if the project defined for the study were to be built. This is done according to the Screening and Scoring Criteria above. Second, the total score for the planning project is scaled down by the following multipliers. The particular multiplier used for a given project depends on the nearness and necessity of the planning project to direct and immediate transportation improvements.

For purposes of this application, the midpoint multipliers are listed.

Planning Activity	Multipliers <i>Circle only one</i>
Preconstruction Activities such as Alternatives Analysis and project design	0.9
Priority Setting Studies such as county-wide bike plans or Deficiency Plans	0.5
Long-Range Feasibility Studies and general planning activities	0.1

SCORESHEET TEMPLATE

The following worksheet may be used to help sponsors self-score proposed projects.

Project Title:
Project Sponsor:
Contact Name/Phone Number:

Screening Criteria Checklist

- Project is in an adopted local plan
 If requested funds are awarded, project will be fully funded
 Project is ready to obligate funds in the year indicated
 Sponsor agrees to follow applicable rules and regulations

Scoring Criteria**Category I**

Replacement/Rehabilitation: Value ___ x % of project that is R/R ___ = ___ (I)
to a maximum of 30 points

Category II

Safety: Multiplier ___ x Impact Value ___ x % Safety ___ = ___ (s)
Congestion Relief:
Multiplier ___ x Impact Value ___ x % Congestion Relief ___ = ___ (cr)
Productivity: Effectiveness Points = ___ (p)
Category II total = (s) + (cr) + (p) to a maximum of 30 points = ___ (II)

Category III

Strategic Expansion:
Multiplier ___ x Impact Value ___ x % Expansion ___ = ___ (III)
to a maximum of 15 points

Category IV

TCM Points = ___ (tcm)
Land Use Points = ___ (lu)
Energy Conservation Points = ___ (nrg)
ADA Points = ___ (ada)
Category IV total = (tcm) + (lu) + (nrg) + (ada) to a maximum of 25 points = ___ (IV)

Category V

Cost-Effectiveness Points to a maximum of 10 points = ___ (V)

Total Project Score

___ + ___ + ___ + ___ + ___ = _____ x _____ = _____
(I) (II) (III) (IV) (V) subtotal Planning Multiplier PROJECT
(otherwise, 1.0) SCORE

IDAHO USER FRIENDLY STIP

L. Ray Mickelson
Idaho Transportation Department

INTRODUCTION

This is a great opportunity for us to share experiences and exchange success stories on numerous aspects of ISTEA which most states have been struggling with over the past four years. The preparation, review, and approval of Idaho's State Transportation Improvement Program has been one of those ISTEA requirements which has been particularly challenging and has been scrutinized by the state legislature, the Idaho Transportation Board, local government officials, the general public, and the media. I feel that our new approach is worth sharing with other states.

ISTEA

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) requires that each State prepare a Statewide Transportation Improvement Program (STIP). The STIP, among other things, shall include all transportation modes, cover a period of at least three years, be consistent with the statewide transportation plan, and be financially constrained.

OBJECTIVE

Idaho, like other states has faced the challenge of meeting the requirements of ISTEA in development of a STIP that meets both federal requirements and State needs. I believe that Idaho has met this challenge by the development of what I refer to as a USER FRIENDLY STIP.

The objective of Idaho was to accomplish the following with a single document:

- Satisfy both FHWA and FTA requirements.
- Provide a document that the public could relate to and understand our planning process.
- Have a geographic focus (with maps) consistent with the six districts.
- Combine all transportation modes.
- Involve Idaho's three metropolitan planning organizations (MPOs).

FEDERAL SUPPORT

We have received much more support for changes from FHWA than from FTA. This situation is mainly due to the physical proximity of the two agencies. FHWA has

an office in Boise, while the FTA office is located in Seattle. Idaho's transportation planning process would be greatly enhanced and streamlined through the consolidation of FHWA and FTA so that we had a single point of contact.

INTERMODAL WORKING GROUP

The main reason for the success that Idaho has realized in the development of a USER FRIENDLY STIP is in the organization of an effective intermodal working group (Group). The Group consists of representatives from the ITD Planning, Highways, Public Transportation, Bicycle and Pedestrian, Rail, Districts, and Public Affairs offices as well as the FHWA. The Group meets monthly and coordinates the activities of all modes. An annual schedule and calendar for the STIP update is developed by the Group. All transportation modes are coordinated with individual schedules adjusted to the benefit of the overall STIP process. The Group strives toward a common format of getting information out for public review and comment and minimizes the number of public meetings through the consolidation of activities. Also, there is a common interest in the development of a STIP document that has a uniform format that is truly multimodal.

SCHEDULE AND PROCESS FOR STIP DEVELOPMENT

All key players involved in the development, review, and adoption of the STIP worked together to establish a schedule and ground rules for finalization. A consensus was reached on process and steps necessary to meet everyone's expectations and needs. The MPOs were also key players in this process. Their local metropolitan Transportation Improvement Programs (TIP) are required to be incorporated into and mirror the STIP. In addition, two of the MPOs must also undertake air quality conformity determinations before projects can be approved for inclusion in the TIPs. Once the STIP reaches Idaho Transportation Board review, any changes affecting project contributing to conformity could affect the acceptance of the overall STIP. Therefore, procedures and contingencies during the review process were established up front by state and MPO Policy Boards.

PUBLIC INVOLVEMENT

There has been an ongoing problem with providing the public with information that is easily understood and serves as the basis for review and comment. We have concluded that the use of maps and an emphasis on routes are important. The public is usually concerned about what is planned for their particular area or along a certain route rather than funding source or jurisdiction. Project information was made available with cross reference to district maps regardless of funding category. The importance of a good visual aid for orientation and use cannot be overemphasized.

IMPLEMENTATION OF THE LONG-RANGE TRANSPORTATION PLAN

The STIP should be viewed as an implementation tool of the long-range transportation plan. ISTEA requires that projects in the STIP be selected based on the plan. The display of all modes of transportation on district maps is most helpful in the analysis of implementing the plan's vision of the future and action strategies.

FUTURE FUNDING

Idaho's format of the STIP is conducive to potential future flexible funding. Re-authorized legislation may give states considerably more flexibility in funding projects regardless of transportation mode. This places more importance on planning and intermodal issues that need to be addressed. We are confident that better policy decisions will be made through the use of good maps and the implementation of a seamless transportation system contained in the STIP.

AVAILABLE COPIES

Copies of Idaho's recently adopted STIP document may be obtained by contacting:

Idaho Transportation Department
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PUBLIC INVOLVEMENT IN PROGRAM DEVELOPMENT AND DELIVERY

John Platt

Ohio Department of Transportation

MAKING THE CASE FOR USING PUBLIC INVOLVEMENT IN PROGRAM DEVELOPMENT AND DELIVERY

Ohio has recognized since the passage of ISTEA in 1991, that a large increase of funding is needed just to preserve and maintain the existing transportation system. This preservation and maintenance include not only roadways, bridges, transit rail and airport runways but also capacity additions to the entire transportation system just to maintain the level of service that Ohioans now enjoy. Because of age and the much greater than forecast traffic volumes on the interstates, bridge and pavement renovations and replacements are urgently needed and must occur.

WHY OHIO DECIDED TO GREATLY EXPAND PUBLIC INVOLVEMENT IN PROGRAMMING AND DEVELOPMENT

The need for rehabilitating and expanding the transportation infrastructure system is so great yet traditional transportation financing mechanisms are under siege. Motor vehicle fuel taxes are being tapped at all levels of government to cure many budgetary ills including deficit reduction. Increasingly, transportation infrastructure improvements need to compete for funding with education, health and welfare needs since user fees are being diverted in greater numbers to nonuser programs.

OHIO'S APPROACH TO PUBLIC INVOLVEMENT

Because of the increasing need for funds coupled with an unprecedented competition from non-transportation uses, Ohio developed a two pronged approach to solving these issues. The first was to develop new and innovative ways to finance infrastructure improvements including defining all of the stakeholders of transportation and having them contribute to its financing. Secondly, we recognized that to survive and thrive economically, we had to get the message out to the public about transportation and the need to find new sources of funds to help preserve and maintain the system. One of the most successful ways to "get the message out" was to meet with the public and begin a dialogue. We wished to "tell our story." What we found early in the process

was that the public was even more eager to talk to us and "tell their story" with the hope that we would be good listeners.

ACCESS OHIO—The Genesis for Using Public Participation to Develop the Long Range Multimodal Transportation Plan

Early in 1992, Ohio began the first phase of ACCESS OHIO known as the "Macro" Plan which was the vision for a future transportation system for the state. The cornerstone of the plan development was the use of public "listening" sessions to receive input that was crucial to identifying the key transportation issues, policies and strategic mechanisms to meet needs as identified by the public. A total of 99 public meetings and listening sessions were held across the state through three separate sets of outreach that involved more than 5,000 persons.

The first set of "listening" consisted of 50 meetings at various locations in Ohio to present the concept of ACCESS OHIO and the importance of developing a multimodal long range transportation plan. The second sets of meetings were termed "town meetings" and consisted of presenting, in draft form, a synopsis of the major issues that were "heard" at the first set of sessions as well as a number of other recommendations.

The major result of the ACCESS OHIO public listening sessions was to forge a new cooperative relationship between the public and ODOT with a reduction in the adversarial attitude that had prevailed prior to the outreach effort. The news media, skeptical in the beginning of ODOT's intentions, became important supporters during the second set of meetings. ODOT personnel in these meetings were open and truthful about the lack of public participation in the past and the problems that resulted from this lack of public input, including the "starting and stopping" of many projects. This openness coupled with the pre-meeting preparations including letters, news releases, invitations to leaders of organizations critical of ODOT in the past, were key elements to the success. For ODOT personnel themselves, there was a new respect for public opinion and a loss of the perception that the public "just does not understand."

FURTHERING PUBLIC PARTICIPATION THROUGH "FOCUS GROUPS"

After the successful conclusion of the "macro" phase of ACCESS OHIO's public participation sessions, ODOT began the "micro" phase. In addition to holding 28 public meetings across the state to review the micro phase and select priority projects within local areas, ODOT appointed "focus groups," one for each of ODOT's Districts that were not included in one of the 16 Metropolitan Planning Organizations boundaries. A total of 11 groups was formed to work directly with ODOT staff to review more detailed technical data including traffic counts, traffic forecasts, volume to capacity ratios and traffic accident information.

The result of the "micro" phase public participation process was a prioritized list of projects that were deemed necessary based upon capacity, pavement and bridge management systems information and forecasted traffic volumes. Included in this process was validation of about 85% of the existing projects that currently were in the ODOT "pipeline," that is, being developed through preliminary and final engineering, leading to eventual construction. The public input sessions further enabled an understanding of how ODOT is funded and the gap between funding resources and transportation system needs. One of the interesting observations was how the General Assembly members of Ohio became much more interested in transportation with each additional public meeting.

PUBLIC PARTICIPATION IN THE PROJECT SELECTION PROCESS AND IN THE DEVELOPMENT OF A SCORING SYSTEM WHICH DRIVES THE STIP

Replete with successful completion of the ACCESS OHIO process, ODOT personnel became comfortable with public input. The decision was then made to develop a citizen involvement process to prioritize and select major new construction projects using a rating system adopted by the group. ODOT historically has selected about 85% of its projects using various management systems such as pavement ratings, bridge deficiency and high accident locations resulting in system preservation. There was, however, no process for ranking needs and selecting projects for major new construction. The selection was done informally based upon the level of local demands (measured politically) and upon the professional judgment of the department's director. This has led to animosity and mistrust and a general misunderstanding among project advocates of how the department makes decisions and how the departmental works within its financial limits.

In ODOT's strategic planning process, VISION 2000, a Goal #3 was adopted in early 1995, to create

"A project selection process based on open, objective criteria." The Project Selection Advisory Committee was formed in September 1995 by the Director of ODOT by the appointment of a broad-based group of elected officials, newspaper publishers, leaders of statewide professional groups, MPOs and ODOT officials. Their role was to help ODOT develop a project selection process that is fair, which meets the state's transportation goals and which can be adopted as the formal means by which ODOT makes major transportation investments. The definition of a major new construction project, originally proposed by ODOT to be capacity adding projects of over \$5 million in cost, was revised by the Project Selection Advisory Committee to be over \$2 million in cost.

The Committee held another 8 public "open hours" informational type meetings across the state and a formal public hearing in Columbus, the state capital. Based upon the input, 18 policies were adopted by the Committee and recommended to the ODOT Director for implementation. In addition to the definition of major new multimodal construction projects and a point ranking system which is attached to this paper, the Committee adopted several very significant policies including:

- Transportation efficiency factors shall have 70% of the weight in ODOT's selection process and economic development shall have 30% of the weight.

- The project selection criteria shall be derived from the goals of ACCESS OHIO.

- Bonus points shall be assigned to projects based upon the amount of local/public/or private funding contributed. This policy allows Ohioans to increase infrastructure investment to complete projects that would otherwise not be possible and to encourage new stakeholders to participate in construction financing for projects of benefit.

- ODOT shall build no new interchanges without at least a 50% contribution of the cost of the interchange from either private, local or other non-ODOT funds. ODOT may not require the interchange proponent to pay for the entire cost of improvements to the general purpose highway lanes affected by the project if the long range plan indicates that lanes will be needed within 5 years of the scheduled interchange construction.

Other policies include the ability to give bonus points for highway projects with intermodal or regional benefits; and, attraction of new jobs and investment for manufacturing, research facilities, distribution and tourism related facilities.

In VISION 2000, ODOT's strategic plan, Goal #2 was to provide a leadership structure that assures consistent long-term direction. To further assure long term consistency, a Citizen's Advisory Committee will become a permanent organization to review the rating

criteria on an annual basis and to score the projects for each year's adopted Statewide Transportation Improvement Program (STIP).

KEY RESULTS OF THE PUBLIC PARTICIPATION PROCESS

In summary, ODOT has learned very much from the public participation process that has resulted in major changes both internally and externally for, what many believe to be, the better. Some of the notable examples are:

- New openness exists between ODOT personnel and the public, particularly local public officials, that has reduced the adversarial attitude that prevailed in the past between the two groups.
- There is a greater understanding in the public and the news media about the funding situation that confronts ODOT and the striving for solutions in an open forum manner. Because of this greater understanding, voters in Ohio on November 7, 1995 by 62% plurality, amended the constitution to allow

ODOT to increase its bonded indebtedness ceiling from \$500 million to \$1.2 billion. This complex of an issue, coming during the extensive media coverage of federal budget balancing, could not have been passed without ODOT involving the public in its decision-making process.

- Governor George V. Voinovich and the General Assembly of Ohio are very supportive of ODOT's initiatives including restructuring/re-engineering of the internal and external organizational elements that make up the Department of Transportation.

- ODOT's employees have a greater appreciation and focus on "customer service" because they are aware of the numerous opportunities for the customers to be involved.

In conclusion, I believe that long after our present ODOT executive staff moves onto other work, their legacy of an open inclusive process will continue and be a part of succeeding administrations. The public will be the guardians of that future and they will assure that the decision-making process for transportation in Ohio remains open and inclusive.

STATE TRANSPORTATION IMPROVEMENT PROGRAM PRE-CONFERENCE TUTORIAL

*Dane Ismart and Paul Verchinski
Federal Transit Administration*

STATEWIDE REQUIREMENTS

Each state must carry out a statewide transportation planning process which is continuing, comprehensive and intermodal, which facilitates the efficient, economic movement of people and goods in all areas of the state, including metropolitan areas. The process must provide for data collection and analysis, consideration of 23 factors in conducting the planning process and coordination with participating agencies. The statewide transportation plan must consider a range of passengers, freight and modal transportation options. Plans must include development of a STIP, and the planning process shall be carried out in coordination with the metropolitan transportation planning process.

REQUIREMENTS FOR STATEWIDE TRANSPORTATION PLANS

- Cover all areas of the state.
- Be intermodal.
- Cover at least 20 years.
- Contain bicycle, pedestrian walkways and trails elements appropriately interconnected with other modes.
 - Be coordinated with the metropolitan transportation plans.
 - Summarize or contain information on financial resources needed to carry out the plan.

REQUIREMENTS FOR STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

- Cover all areas of the state, although a partial STIP is acceptable.
 - In a metropolitan planning area, TIPs shall be developed in cooperation with the MPO.
 - Include TIPs without modification once approved by the MPO and the Governor and after conformity findings are made.
 - State shall notify the appropriate agencies when a TIP including projects under its jurisdiction is included in STIP.

- Title 23 and Federal Transit Act fund recipients will share information as projects in the STIP are implemented.

- Priority transportation projects for first 3 years are at least grouped by year.

- TIP priorities dictate STIP priorities for metro areas.

- Cover a period of not less than 3 years (additional years are only informational).

- Contain projects consistent with the statewide plan.

- In non-attainment and maintenance areas, projects must be from conforming programs.

- Be financially constrained by year.

- Include sufficient financial information to demonstrate which projects are to be implemented using current revenues and which projects are to be implemented using proposed revenue sources while the system as a whole is being adequately operated and maintained.

- In non-attainment and maintenance areas, during the first 2 years projects limited to those for which funds are available or committed.

- Strategies for ensuring availability of proposed funding sources shall be identified.

- Contain all capital and non-capital transportation projects or identified phases proposed for funding under the Federal Transit Act and/or Title 23, excluding:

- Safety projects under Section 402.

- ITS planning grants under ISTEA 6055(b).

- Transit planning grants under FTA Section 8 or 26.

- Metropolitan planning projects under 23 U.S.C. 104(f).

- State planning and research projects under 23 U.S.C. 307(c)(1) (except under NHS, STP and MA funding that the State and an MPO agree should be in the TIP and consequently in the STIP).

- Emergency relief projects (except substantial functional, location, or capacity changes).

- Contain regionally significant transportation projects requiring FHWA or FTA action regardless of funding.

- For information, including regionally significant transportation projects funded with Federal funds other than those administered by FHWA or FTA.

- Include, for information purposes, if appropriate and cited in any TIPs, regionally significant projects, to be funded with non-Federal funds.

- Include for each project the following:
 - Sufficient descriptive material to identify the project or phase.
 - Estimate total cost.
 - Amount of Federal funds proposed to be obligated during each program year.
 - Identification of responsible agency(s).
- Projects in a given program year may be grouped.
- Projects may be moved among the first 3 years of the STIP subject to the project selection requirements.
- STIP may be amended under procedure agreed to by the cooperating parties.

STATEWIDE PROJECT SELECTION CONSIDERATIONS

- Only projects included in STIP are eligible.
- In metropolitan planning areas, the projects shall be selected in accordance with the project selection portion of the metropolitan planning regulations.
 - Outside metropolitan planning areas:
 - NHS, bridge and interstate maintenance projects will be selected by the state in consultation with affected local officials.
 - Other FHWA funded projects selected by state in cooperation with affected local officials.
 - The projects in the first year of an approved STIP shall constitute an agreed to list of projects for scheduling and implementation.
 - FTA funded projects shall be selected by states in cooperation with the appropriate affected local officials and transit operators.
 - Project selection procedures need to be followed to advance a project from the outyears of a STIP.
 - Expedited selection procedures which provide for the advancement of projects from the second or third year of a STIP may be used if approved by all parties.

METROPOLITAN PLANNING AND PROGRAMMING REQUIREMENTS

Each metropolitan area transportation planning process must include the development of a Long-Range Transportation Plan addressing at least a 20-year planning horizon by December 18, 1994. The adopted plan must include a financial plan for meeting revenue shortfalls through strategies for developing new or increased revenues, and:

- Demonstrate the consistency of proposed transportation investments with already available and projected sources of revenue;
- Compare the estimated revenue from existing and proposed funding sources that can reasonably be expected

to be available for transportation uses, and the estimated costs of constructing, maintaining, and operating the total (existing plus planned) transportation system over the period of the plan;

- In non-attainment and maintenance areas, address the specific financial strategies required to ensure implementation of projects and programs to reach air quality compliance.

The development of strategies to meet revenue shortfalls over a 20-year time period is difficult to forecast concretely in detail. However, the intent is to make the Long-Range Plan more “realistic” by constraining them to revenues reasonably available to a metropolitan area and state. The MPOs and the states will need to work cooperatively to identify revenues available to the area including forecasts of federal, state, local, and private revenues.

A TIP must be updated at least every two years and approved by the MPO and the governor. The development of the TIP must be conducted by the MPO in cooperation with the state and public transit operator(s) in the metropolitan region and cover a period of not less than three years. The TIP may cover a longer time period if it identifies priorities and financial information for the additional years.

The state and the transit operator(s) must provide the MPOs with estimates of available federal and state funds which the MPOs shall use in developing financial plans.

The TIP must be financially constrained by year and contain a financial plan that:

- Demonstrates which projects can be implemented using current revenue sources and which projects are to be implemented using proposed revenue sources (while the existing transportation system is being adequately operated and maintained);
- Indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan and, in the case of new funding sources, identifies strategies for ensuring their availability;
- Recommends any innovative financing techniques to finance needed projects and programs, including value capture, tolls, and congestion pricing.

In developing the financial analysis, the MPO shall take into account all projects and strategies funded under Title 23, U.S.C., and the Federal Transit Act, other federal funds, local sources, state assistance, and private participation.

In non-attainment and maintenance areas, projects included in the first two years of the current TIP shall be limited to those for which funds are available or committed.

PROGRAM

CONFERENCE ON TRANSPORTATION PROGRAMMING METHODS AND ISSUES

Charting a Course to the Future

December 3-6, 1995

Hyatt Newporter and Beckman Center
Irvine, California

Sunday, December 3, 1995

10:00 A.M. - 12 noon Demonstrations

2:00 P.M. - 4:00 P.M. Michigan DOT: Project Information Management (PIMS)
Arizona DOT: Revenue/Financial Risk Analysis Procedure
Caltrans: Intermodal Management
Public Transportation Management System

1:30 P.M. - 5:00 P.M. Tutorial

STIP Development, Dane Ismart, Federal Highway Administration
Paul Verchinski, Federal Transit Administration

Monday, December 4, 1995

8:30 A.M. - 10:00 A.M. SETTING PROGRAM GOALS AND OBJECTIVES

Moderator

Lance A. Neumann, Conference Chairman

Transportation Planning and Performance Measurement in Washington State

Brian Ziegler, Washington State Department of Transportation

Case Studies: Different Approaches for Defining Program Goals

Darwin G. Stuart, Chicago Transit Authority

Developing Plan and Program Financial Options

Debra Wilson, Indiana Department of Transportation

10:15 A.M. - 12:15 P.M. BREAKOUT SESSIONS

Developing Program Goals and Objectives

1:30 P.M. - 3:00 P.M. PROGRAMMING METHODS

Moderator

Robert Gorman, Federal Highway Administration

Role of ISTEA Management Systems in Priority Setting and Program Development

Theresa Petko, Michigan Department of Transportation

Statewide Planning as a Framework for Programming Decisions

James L. Covil, Wilbur Smith Associates

Risk Analysis as a Tool for Making Benefit/Cost Work in an Environment of Conflict

David L. Lewis, Hickling, Lewis and Brod Associates

3:15 P.M. - 5:00 P.M. BREAKOUT SESSIONS

Programming Methods

Tuesday, December 5, 1995

8:30 A.M. - 10:00 A.M. PANEL DISCUSSION
Developing Multimodal Programming Processes

Moderator

Mark L. Stout, New Jersey Department of Transportation

Panelists

James W. Glock, City of Tucson

Debra L. Miller, Kansas Department of Transportation

David Murray, Metropolitan Transportation Commission (San Francisco)

10:15 A.M. - 12:00 noon BREAKOUT SESSIONS
Multimodal Program: Roles/Process/Procedures

1:30 P.M. - 3:00 P.M. PROGRAM IMPLEMENTATION AND COMMUNICATION

Moderator

Kumares C. Sinha, Purdue University

Idaho User Friendly STIP

L. Ray Mickelson, Idaho Transportation Department

Performance Measures as a Guide to Plan/Program Results

Steve Pickrell, Cambridge Systematics, Inc.

Public Involvement in Program Development and Delivery

John R. Platt, Ohio Department of Transportation

3:15 P.M. - 5:00 P.M. BREAKOUT SESSIONS
Program Implementation and Communication

Wednesday, December 6, 1995

8:30 A.M. - 10:30 A.M. REPORT OF WORKSHOP BREAKOUT SESSIONS
Findings and Recommendations

10:45 A.M. - 12:00 noon OPEN DISCUSSION OF RECOMMENDATIONS

12 noon ADJOURNMENT

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