



**STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL**

**A PERFORMANCE AUDIT
OF THE**

**ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAY PROGRAMMING PROCESS**

OCTOBER 1982

**A REPORT TO THE
ARIZONA STATE LEGISLATURE**



DOUGLAS R. NORTON, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

October 20, 1982

Members of the Arizona Legislature
The Honorable Bruce Babbitt, Governor
Members of the Transportation Board
Mr. William Ordway, Director
Arizona Department of Transportation

Transmitted herewith is a report of the Auditor General, A Performance Audit of the Arizona Department of Transportation, Highway Programming Process. This report is the second of a series of reports to be issued on the Arizona Department of Transportation and is in response to Senate Bill 1001 enacted by the Thirty-fifth Legislature, Second Special Session in 1981.

The blue pages present a summary of the report; responses from the Director of the Department of Transportation and the Chairman of the Transportation Board are found on the yellow pages preceding the appendix.

My staff and I will be pleased to discuss or clarify items in the report.

Respectfully submitted,

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Enclosure

OFFICE OF THE AUDITOR GENERAL

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REPORT 82-4

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SUMMARY

The Office of the Auditor General has conducted a performance audit of the Arizona Department of Transportation (ADOT), Highway Programming Process in response to Senate Bill 1001 enacted by the Thirty-fifth Legislature, Second Special Session in 1981. This report is one of a series to be completed on the Department of Transportation.

One of the most important responsibilities of the Arizona Department of Transportation is the development of the five-year highway construction program. The five-year highway program is a multiyear schedule of up to \$1 billion in highway construction projects which is updated annually. ADOT's responsibility for programming highway construction projects is vested by law in the Transportation Board, a seven-member body appointed by the Governor, and the Transportation Priority Planning Committee, a departmental management committee.

Results of the audit indicated that the Transportation Board and ADOT Director lack adequate control over highway programming decisions. Because their statutory roles are weak, neither the Board nor the Director have been adequately involved in establishing and reviewing critical policy decisions which are an essential part of the highway programming process (see page 5). In addition, current statutory procedures governing highway programming are unworkable and appear to be unnecessary. Statutory changes are needed to:

1. Give the Transportation Board specific responsibility and authority to establish policies to guide development of the five-year highway construction program and
2. Assign the ADOT Director responsibility for developing the highway construction program in accordance with policies established by the Board.

If the statutes are revised to assign the ADOT Director responsibility for developing the Highway Construction Program, the Priority Planning Committee established through A.R.S. §28-111 will be unnecessary and should be eliminated from the statutes. The ADOT Director should establish a departmental committee administratively, if necessary, to develop the annual highway construction program in coordination with the Transportation Board (see page 15).

The audit also revealed that the Transportation Board does not have adequate program options and information on the impacts of program policies to enable it to make well-informed highway programming decisions. Staff recommendations to the Board do not include an adequate array of program options, including alternative funding levels, project design and levels of improvement, with the advantages and disadvantages of each option fully analyzed. A formal evaluation of the impact of existing program policies also is not conducted as part of the highway programming process. Program options should be developed for Board consideration and the impact of program policies should be formally evaluated (see page 17).

The Board also lacks statutory responsibility to monitor the status of projects. A.R.S. §28-106.C should be amended to include the monitoring of project status as a Board responsibility (see page 22).

The Office of the Auditor General contracted with Cambridge Systematics, Inc., a transportation consulting firm, for assistance in evaluating the statutorily required technical rating formula used by the Department to set construction project priorities. Results of the consultant study and our own evaluation indicated that ADOT's technical rating formula is limited in use. The formula is used to rate only major reconstruction projects (less than 12 percent of highway program expenditures) and can obscure important policy considerations when rigidly applied.

In addition, the formula is unnecessarily complex and could be simplified. A.R.S. §28-111.B.1 should be amended to give the Transportation Board and ADOT Director more discretionary authority and flexibility in applying the statutory criteria in the Highway Programming Process. In establishing criteria, the economic and environmental portion of the formula should be dropped and the traffic safety rating should be consolidated with the sufficiency rating. Also, the social, economic and environmental factors should be treated as policy issues to be considered by the Transportation Board and a more comprehensive economic benefits analysis should be developed separate from the technical formula (see page 25).

The Transportation Board and the Priority Planning Committee did not fully comply with the Open Meeting Law prior to this audit. Corrective action has since been taken (see page 31).

Finally, because of time constraints and a reorganization which was occurring during our audit, we were unable to address several issues, including whether the staffing level of the Transportation Planning Division is appropriate. For a statement of audit scope, see page 4. For a list of potential future audit issues, see page 35.

INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of the Arizona Department of Transportation, Highway Programming Process in response to Senate Bill 1001 enacted by the Thirty-fifth Legislature, Second Special Session in 1981. This report is one of a series to be completed on the Department of Transportation.

One of the most important responsibilities of the Arizona Department of Transportation is the development of the five-year highway construction program in cooperation with the Transportation Board. The five-year highway construction program is a multiyear schedule of highway construction projects which is updated annually. As shown in Table 1, approximately \$200 million in highway projects were scheduled for construction in the first year of the five-year program for fiscal years 1978-79 through 1981-82. Most of these projects involved pavement preservation and reconstruction work on the existing State system, shown in Figure 1, and construction of new routes.

TABLE 1

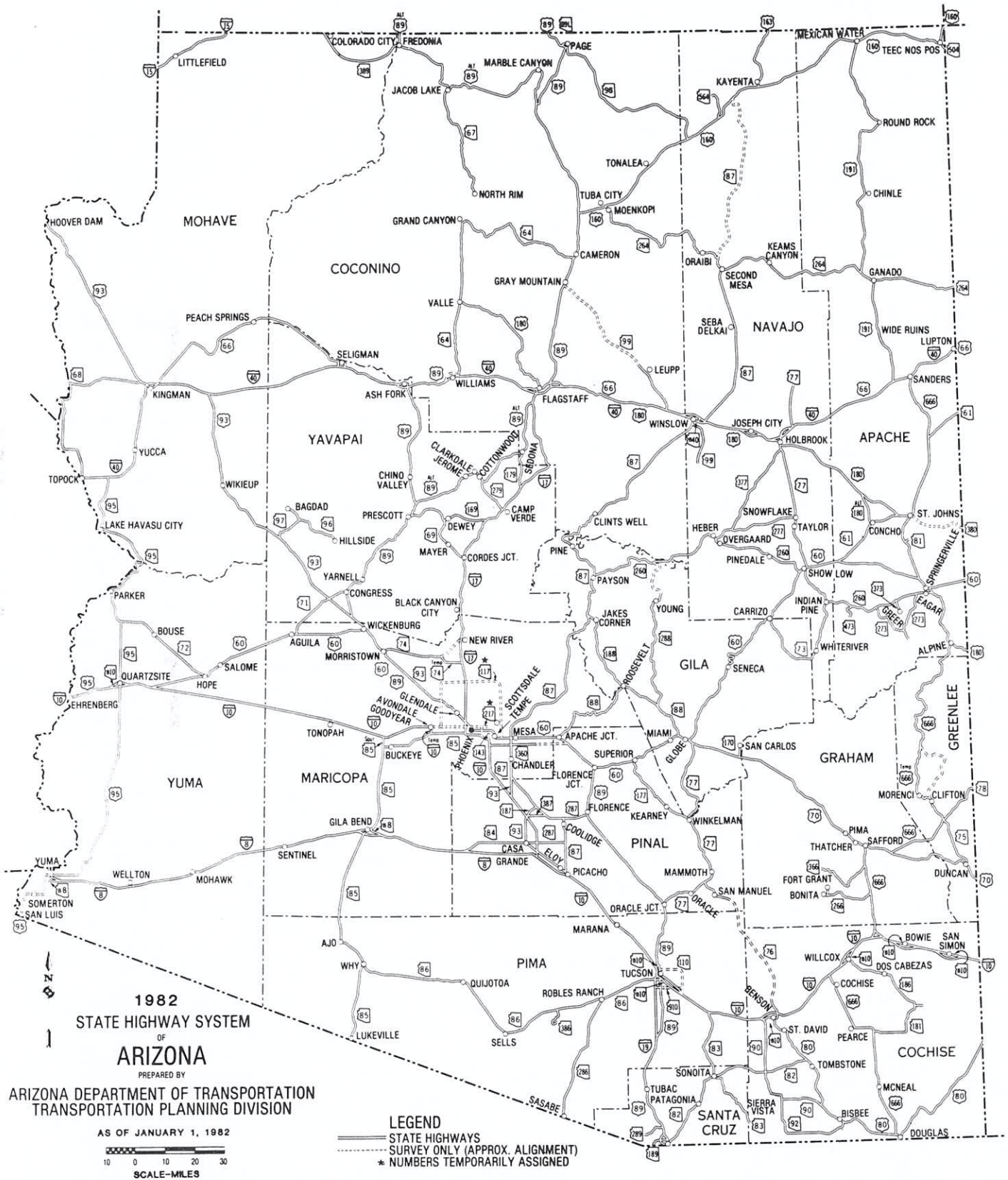
CURRENT-YEAR HIGHWAY CONSTRUCTION PROGRAM
PLANNED EXPENDITURES FOR
FISCAL YEARS 1978-79 THROUGH 1981-82
(AMOUNTS IN THOUSANDS)

<u>Road Classification</u>	<u>Fiscal Year</u> <u>1978-79</u>	<u>Fiscal Year</u> <u>1979-80</u>	<u>Fiscal Year</u> <u>1980-81</u>	<u>Fiscal Year</u> <u>1981-82</u>
Interstate	\$139,470	\$109,690	\$144,480	\$120,400
Primary*	29,850	29,800	51,050	35,950
Secondary**	4,600	5,500	1,600	4,700
Other	34,255	33,860	17,180	33,965
Total	<u>\$208,175</u>	<u>\$178,850</u>	<u>\$214,310</u>	<u>\$195,015</u>

* Major arterial routes

** Major collectors

FIGURE 1
1982 ARIZONA HIGHWAY SYSTEM MAP



ADOT's responsibility for programming highway construction projects is vested by law in the Transportation Board, a seven-member body appointed by the Governor, and the Transportation Priority Planning Committee, a departmental management committee. Membership of the Committee consists of the assistant directors for highways, public transit, aeronautics, administrative services and transportation planning and two department executives appointed by the ADOT Director. The directors of the Office of Economic Planning and Development and the Joint Legislative Budget Committee also serve on the Committee as nonvoting members.

A.R.S. §28-111 establishes the following responsibilities of the Priority Planning Committee:

- Establishment of a technical rating formula for setting transportation facilities construction priorities,
- Development of an annual five-year priority construction program for Transportation Board consideration,
- Review of priority program changes or new projects requested by the Transportation Board, and
- Recommending to the Board priority program changes or new projects needed during the course of the program year.

The Transportation Board, consisting of six members representing County-based Transportation Districts* and one member representing the State at large, is required to determine priority planning with respect to transportation facilities pursuant to A.R.S. §28-106. The Board is charged with the following specific highway programming responsibilities in accordance with A.R.S. §28-1825:

- Review and adoption of the Priority Planning Committee's recommended five-year construction program following a public hearing,
- Preparation of an annual report summarizing the five-year program, and

* The six districts include the following counties: 1-Maricopa; 2-Pima; 3-Cochise, Greenlee and Santa Cruz; 4-Gila, Graham and Pinal; 5-Apache, Coconino and Navajo; and 6-Mohave, Yavapai and Yuma.

- Revision of the program as needed during the course of the year.

Audit Scope and Objective

The scope of our audit work on the Highway Programming Process was limited to the following issues:

- Whether the Transportation Board and the ADOT Director have adequate control over the five-year highway programming process.
- Whether the Transportation Board has sufficient information and authority to properly fulfill its responsibilities,
- The usefulness and viability of the rating formula used by the Department to establish project priorities, and
- Whether the Transportation Board and the Department have complied with the requirements of the Open Meeting Law.

In addition, we reviewed other functions and responsibilities of the Department's Transportation Planning Division which staffs the Highway Programming Function. Because of time constraints and a reorganization which was occurring during our audit, we were unable to address several issues of concern, including whether the staffing level of the Division is appropriate. For a list of potential future audit issues, see page 35.

The Office of Auditor General expresses appreciation to the members of the Transportation Board and the Department of Transportation staff for their cooperation and assistance during the course of our audit.

FINDING I

BECAUSE OF WEAK STATUTORY ROLES, THE TRANSPORTATION BOARD AND THE ADOT DIRECTOR DO NOT HAVE ADEQUATE CONTROL OVER HIGHWAY PROGRAMMING DECISIONS.

Major highway programming decisions have been made by ADOT technical staff without adequate review and control by the Transportation Board and the ADOT Director. Because their statutory roles are weak, neither the Board nor the Director have been adequately involved in establishing and reviewing critical policy decisions which are an essential part of the highway programming process. Further, although the intent of statutes governing highway programming was to strengthen the technical basis for programming and to ensure proper decisions by the Board, some statutes are cumbersome, unworkable and appear to be unnecessary.

Transportation Board and Director Lack Control Over Major Staff Decisions

Because of weak statutory roles, the Transportation Board and the ADOT Director do not have adequate control over ADOT staff decisions governing the five-year highway construction program. Neither the Board nor the Director have been adequately involved in establishing and reviewing critical policy choices made by staff. This input and review by the Board and Director is needed for effective programming.

Board and Director Are Not Adequately
Involved in Policy Decisions

The Transportation Board and the ADOT Director do not play an adequate role in establishing policy direction to guide development of the highway construction program. In some cases, critical policy choices are made for the most part by the technically oriented Priority Planning Committee, consisting of ADOT staff but not including the Director as a member. In other cases, policy choices are implicit in the Committee's priority rating formula (see page 25). Examples of these decisions include how much should be spent on preservation of existing State roads and what new construction projects should be funded.

The Department recently attempted to address this problem but with limited success. Recognizing the need for early policy input and direction, the Priority Planning Committee presented to the Board for the first time in December 1981 several policy issues which needed to be addressed. These policy issues are as follows:

- The extent to which Federal aid should be used for pavement preservation (e.g., resurfacing existing roadways), and how pavement preservation funds should be used.
- Whether existing expenditure priorities concerning routine maintenance, pavement preservation and new construction were appropriate and relevant.
- How "15 Percent Funds"* set aside for construction of controlled access highways in urban areas should be used.
- How widening and/or extending the Superstition Freeway (S.R. 360) should be funded.
- Whether local participation in the priority program process was adequate, and how local input should be solicited.
- Whether two priority programs should be developed by the Committee rather than one because of uncertainty over the level of available revenue.

* S.B. 1001 enacted during the Legislature's Special Session on transportation funding in 1981 requires that at least 15 percent of ADOT funds be spent on controlled access highways in the Phoenix and Tucson urban areas.

At a meeting on January 29, 1982, the Transportation Board reached consensus in two policy areas: 1) the role of public participation and how public participation will be solicited and 2) how input would be received from the Maricopa and Pima Associations of Governments on the use of the 15 percent urban funds. However, the Board did not make official policy decisions in any of the other areas presented by the Priority Planning Committee. The Chairman of the Board expressed concern that the Board not overstep its statutory authority.

Board and Director Involvement Is Needed
for Effective Programming

Transportation Board and Director involvement in establishing and reviewing critical policy decisions is essential for effective programming. Failure to provide for such involvement may result in disruption of the development of the priority program and may impair the stability of the five-year construction program.

According to authoritative literature, highway programming is not a purely technical process. Development of a publically acceptable program that equitably addresses transportation problems requires critical policy decisions which are based on both technical analysis and nontechnical considerations.* Technical staff who make most of the individual project decisions need to be guided throughout the programming process by policies approved by top management and the Board.

The need for Transportation Board and Director involvement has also been recognized and reported by ADOT staff. An ADOT staff report submitted to the Priority Planning Committee in February 1981 stated:

"An overall concern with the priority planning process is that the decision makers, i.e., PPC, Director, and Board do not get involved until late in the program development when there is little or no time to set direction or make substantive changes."

* These nontechnical considerations include political commitments, legislative mandates, emergencies, special emphasis, commitments to other agencies and system continuity.

Lack of adequate Board and Director involvement in the programming process recently resulted in disruption of project planning. The ADOT Director intervened late in the program development cycle to reverse an unacceptable Priority Planning Committee decision.

On March 4, 1982, the Priority Planning Committee officially approved and sent to the Board and Regional Councils of Government a tentative five-year highway construction program. The program, however, did not include an important project--extending the length of the Superstition Freeway (S.R. 360) in Mesa. Although the Committee had attempted to rate and compare the Superstition Freeway project to other major highway construction projects competing for funds, it was unable to develop a technical basis for including the Superstition project in the fiscal year 1982-83 program. Important nontechnical considerations were ignored.

Because the decision was of major importance, the ADOT Director, who rarely becomes involved directly in Committee activities (see page 10), intervened on March 19, 1982, to reverse the Planning Committee's decision on the Superstition project. The Director and the Transportation Board chairman, who had not been involved in the decision, viewed the Committee's action as unacceptable.* Facing tight deadlines for completing its work, the Priority Planning Committee hastily revised its recommended project priorities.** The tentative Planning Committee program subsequently presented to the Transportation Board on March 26, 1982, included the Superstition Freeway project.

* According to a Transportation Board member, the program was also unacceptable because it omitted the Kolb Road project in Tucson and included a disproportionate number of projects in the Prescott area.

** It should be noted that the Board and Department were required to prepare a program this year under unusual and special circumstances. Recently enacted transportation finance legislation and uncertainty over the amount of State and Federal funding available for the highway program made programming deadlines difficult to meet.

Lack of Board and Director involvement in program policy setting may also impair stability of the five-year program.* According to ADOT staff and Board members, more Board policy involvement would improve stability. Both ADOT staff and Board members have recognized the need to improve program stability. In fiscal year 1980-81, 27 percent of projects scheduled for construction were either delayed or dropped from the program. In addition, most (61 percent) of the projects scheduled for construction were new or added projects which had not been programmed consistently in prior years. Only 18 percent of projects scheduled for construction in fiscal year 1980-81 were on schedule as originally programmed.

Program stability is important for two reasons. First, preliminary engineering work done by the Department is based on the five-year program.** Projects delayed or dropped from the program represent unnecessary additional highway design work or work wasted by the Department. Second, the five-year program serves as a basis for manpower planning and allocation throughout the Department. A stable program is needed to plan efficient utilization of staff resources.

Statutory Roles of Transportation Board and ADOT Director Are Weak

The Transportation Board and ADOT Director lack adequate involvement in and control over highway programming because their statutory roles are weak. The Transportation Board does not have clear statutory authority to establish program policy, and policy established is not binding on the Committee. The Director has even a weaker role since he has no explicit statutory authority to intervene in the programming process. By contrast, boards and directors in other states play a stronger and more central role in the highway programming process.

* Factors which can adversely impact program stability include revenue uncertainty, Federal obligation limits (annual ceilings on total Federal aid highway spending by the states) and inaccurate cost projections.

** Highway construction projects can require seven years or more of project development before being ready for construction.

Board Responsibility for
Policy Setting is Unclear

The Transportation Board has a weak policy-setting role in the programming process. Neither A.R.S. §28-1825 establishing Transportation Board procedures for highway programming nor A.R.S. §28-106 setting forth the general powers and duties of the Board mention development of program policy as a Board responsibility.

Although not clearly spelled out in law, the Board appears to have policy-setting authority. In an opinion dated March 11, 1982, the Legislative Council stated:

"Since the primary authority to develop a priority program plan rests with the Board, the Board has those powers and duties which are reasonable to fairly and effectively develop a statewide priority transportation facilities construction program. It would appear that it is a reasonable exercise of such powers and duties if the Board make...policy decisions...to guide the preparation of the (Priority Planning) Committee's five-year construction program."

Under the current statutory division of responsibilities, however, policy decisions made by the Board are not binding on the Priority Planning Committee. There is no statutory requirement that the Committee follow the Board's policy direction although the statutes do give the Board final authority over what projects are included in the program.

ADOT Director Has No Statutory
Role in Highway Programming

The Director of the Department of Transportation has no direct statutory role in the highway programming process and, as a result, lacks sufficient control over it. A.R.S. §28-111 establishing the Priority Planning Committee provides that the Director appoint two members of the Committee. The Director does not serve as a member of the Committee, however, and does not have clear authority to review Committee recommendations and intervene in its activities.

According to ADOT staff, the current planning committee system lacks accountability because of the weak statutory role of the Director. In recent years, the Director has become more involved in highway programming by providing input early in the program development cycle. In addition, the Transportation Board approved procedures in 1981 which gave the Director responsibility for reviewing Committee recommendations prior to their submission to the Board. However, this review usually occurs late in the programming cycle and can result in disruption of program planning as illustrated in the case example cited earlier (see page 8).

Board members and staff interviewed stressed the need for the Director to play a stronger role in the highway programming process. The Director's leadership is needed to ensure that the programming function is efficiently and effectively accomplished by the ADOT staff.

In an opinion dated April 26, 1982, the Legislative Council stated that the Legislature probably intended that the Director play a more central role in the highway programming process.

"Since one of the Committee's main responsibilities is to recommend a long-term transportation construction schedule, it seems apparent that in order to effectively coordinate local government transportation planning with state planning the director must take a major role in the preparation of the transportation facilities construction program.

"...Given the broad authority of the director over the department one could assume that the legislature intended that the director supervise the work of the committee and the preparation of the transportation facilities construction program including review and approval of the committee's recommendations prior to their submission to the board."

Other State Boards and Directors Have Stronger
and More Central Roles in Highway Programming

As part of our audit, we reviewed legislation and practices in 14 other states identified by national experts* as having good programming practices or features of good practice. Results indicated that boards and agency directors in other states have greater involvement in and control over the highway programming process.

Most transportation boards or commissions reviewed in other states have a clear policy role established by law. Eight states reviewed had transportation boards or commissions while six states did not.** Of the eight states with boards, as shown in Table 2, six establish a specific statutory policy role for the board or commission.

TABLE 2
POLICY RESPONSIBILITY IN EIGHT STATES WITH BOARDS OR
COMMISSIONS INVOLVED IN HIGHWAY PROGRAMMING

<u>Policy Responsibility Established in Law</u>	<u>Policy Responsibility Not in Law</u>
California	South Dakota
Iowa	Texas
New Mexico	
Utah	
Vermont	
Washington State	

In Utah and California the commission's policy responsibilities are primarily advisory in nature. In the other four states, however, the transportation boards or commissions have clear policy-setting responsibilities.

* Thomas F. Humphrey, Massachusetts Institute of Technology; Bruce Campbell Vanesse-Hansen Associates; and Kenneth Cook, Transportation Research Board. See Evaluation Criteria and Priority Setting For State Highway Programs, National Cooperative Highway Research Program Report #84, Transportation Research Board, 1981 and Priority Programming and Project Selection, N.C.H.R.P. Report #48, Transportation Research Board, 1978.

** The six states reviewed which had no board or commission involved in highway programming were Florida, Illinois, New Jersey, Minnesota, New York and Wisconsin.

Also in contrast with Arizona, agency directors and commissioners in other states play a strong, central role in highway programming. In each of the 14 model states reviewed, the transportation agency director has final authority and responsibility for departmental programming decisions. For example, in Iowa, which has a transportation commission, all recommendations to the commission are made through the director. In Illinois, which has no commission, the secretary of transportation approves the highway construction program and presents the program to the governor and the legislature.

Some Statutory Procedures Are Unworkable and Appear Unnecessary

Although current statutory procedures governing highway programming were intended to strengthen the technical basis for programming and restrict the Board's power to politically influence decisions, some procedures are unworkable and appear to be unnecessary.

Procedures Are Unworkable

Legislative requirements governing highway programming are cumbersome and unworkable. Three of these requirements, which specify in detail the membership of the Priority Planning Committee, responsibilities of the Board and the Priority Planning Committee and procedures governing the Board and Committee's working relationship, are discussed below.

Statutory provisions regarding membership of the Priority Planning Committee lack sufficient flexibility to promote an efficient programming process. The Committee consists of ADOT's assistant directors for highways, public transit, aeronautics, administrative services and transportation planning and two department executives appointed by the Director.* The Department found that the top managers on the Committee were not the appropriate staff to carry out many of the Committee's detailed work responsibilities. These responsibilities were delegated to subcommittees

* The Directors of the Office of Economic Planning and Development and the Joint Legislative Budget Committee also serve on the Priority Planning Committee as nonvoting members. Participation by the OEPAD and JLBC Directors, however, has been sporadic and limited in value.

consisting mostly of other ADOT managers not on the Committee. Delays occur and additional staff time is required to carry out some Committee responsibilities because work must be reviewed and approved by both the subcommittees and the Committee before being submitted to the Transportation Board.

In addition, the priority rating formula established by law has limited use. A.R.S. §28-111.B.3. requires that the Priority Planning Committee review any changes in priorities requested by the Transportation Board and make recommendations based on a study of the legislatively established criteria and rating formula. Recommendations must be fully documented in a written report to the Board. However, the rating formula is applied to only 12 percent of ADOT's total highway program expenditures (see Finding III, page 25). The formula cannot be used to make major policy decisions nor to rate most of the projects included in the highway construction program.

Finally, a major procedural requirement imposed on the Transportation Board has not worked as intended. The Transportation Board is mandated by A.R.S. §28-1825.F. to require a Planning Committee study before making any priority project changes. If it deviates from Committee recommendations, the Board must specifically document the reasons and justifications for such deviations in a written report to the Director and the Governor. The Transportation Board however has not complied with this requirement. Although the Board's noncompliance was identified in an ADOT staff analysis completed in February 1981, this noncompliance was never officially brought to the Board's attention.

Legislative Procedures Appear to Be Unnecessary

The legislative procedures currently in effect appear to be unnecessary. A survey of legislation in 14 model states disclosed that none have procedures similar to Arizona's. Although eight states surveyed had a departmental management committee similar to Arizona's, no state had established the committee, its membership and its procedures in state law.

CONCLUSION

The Transportation Board and ADOT Director do not have adequate control over highway programming decisions because their statutory roles are weak. In addition, cumbersome legislative requirements are unworkable and appear to be unnecessary.

RECOMMENDATIONS

1. A.R.S. §28-106 should be amended to give the Transportation Board specific statutory responsibility and authority to establish policies to guide development of the five-year highway construction program.
2. A.R.S. §28-108 should be amended to give the ADOT Director statutory responsibility for developing the highway construction program in accordance with policies established by the Board.
3. The Priority Planning Committee established through A.R.S. §28-111 should be eliminated from the statutes. The ADOT Director should establish a departmental committee administratively, if necessary, to develop the annual highway construction program.

FINDING II

THE TRANSPORTATION BOARD DOES NOT HAVE ADEQUATE INFORMATION NOR SUFFICIENT PROJECT MONITORING AUTHORITY TO PROPERLY FULFILL ITS HIGHWAY PROGRAMMING RESPONSIBILITIES.

The Department of Transportation does not provide sufficient information to the Transportation Board to enable the Board to make well-informed decisions. The Board does not have adequate program options and alternatives and lacks information on the impacts of program policies. In addition, the Board does not have sufficient statutory authority to monitor the status of highway projects. As a result, the Board cannot properly fulfill its responsibility to determine how up to \$1 billion in highway construction funds should be spent over the next five years.

Adequate Program Options and Alternative Improvement Levels Should Be Developed

The Department of Transportation has not provided the Transportation Board with adequate program options and alternatives. By statute, the Priority Planning Committee is responsible for recommending annually a five-year highway construction program to the Transportation Board. Generally, the Committee presents one set of recommendations to the Board rather than an array of program options. On occasion, the Priority Planning Committee has presented optional recommendations to the Board. However, these options have been limited mainly to schedule changes and have not usually included alternative funding levels (based on different revenue assumptions or use of bonding) and alternative levels of improvement.

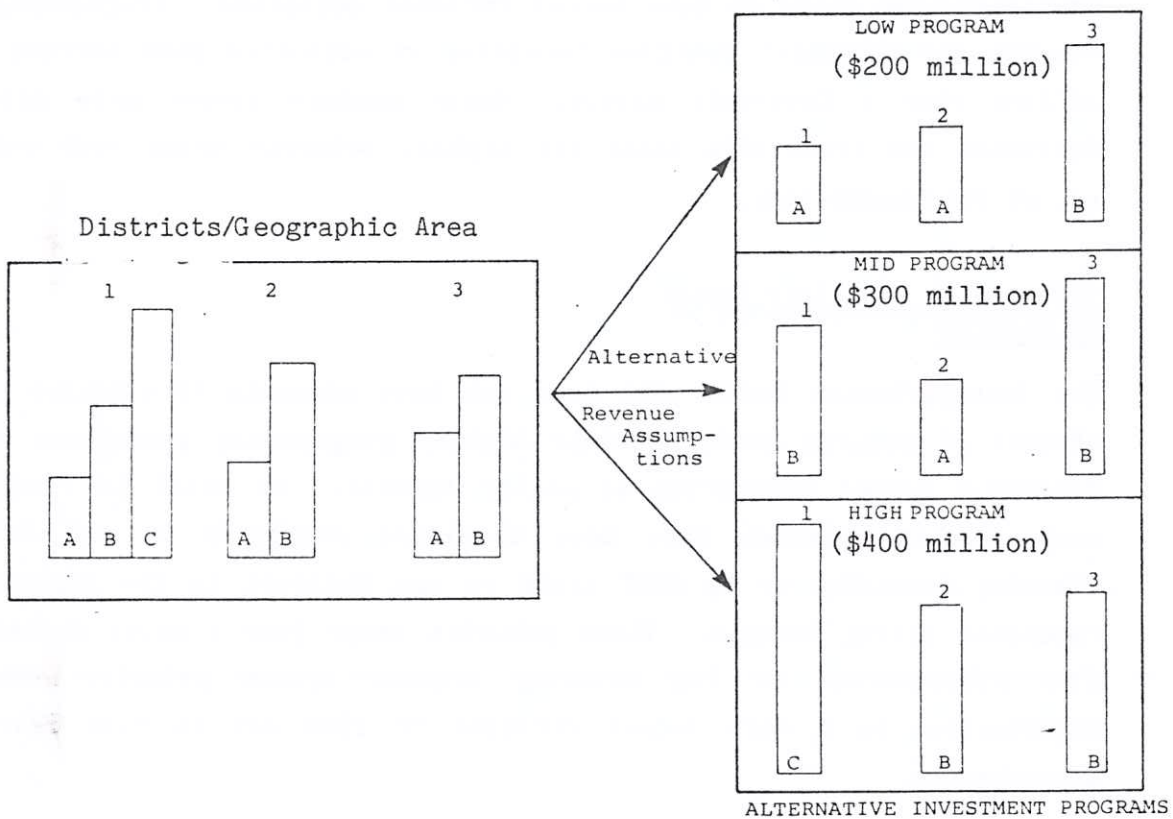
According to members of the Committee, recent funding uncertainties have hindered the development of program options. Staff efforts have focused on determining availability of funds and funding sources rather than preparing viable program options.

Our observations of Committee meetings indicated that restrictive legislative requirements also deter the Committee from making alternative recommendations to the Board (see page 13). For example, at a meeting on March 4, 1982, the Committee discussed whether or not the need for bonding to complete the Papago Freeway in Phoenix (I-10) should be presented to the Board. One Committee member argued that it was not within the Committee's authority to recommend new revenue sources to the Board. Nevertheless, the matter was eventually brought to the Board.

National experts on highway programming recommend the development of program options as is current practice in some states. All options should be analyzed so that decisionmakers understand the major advantages and disadvantages of each.

In Wisconsin, for example, alternative program options have been developed based on varying revenue assumptions. For each program area (e.g., preservation and reconstruction, bridge replacement, interstate and major projects), low, mid and high program options were developed and evaluated. Figure 2 shows the options developed in Wisconsin for the preservation and reconstruction category. Under the low revenue assumption (\$200 million), projects "A" for areas 1 and 2, and projects "B" for area 3 were selected. Under the mid (\$300 million) and high (\$400 million) program options, however, different project combinations were selected. The availability of program alternatives allowed Wisconsin to compare the likely impact of funding alternatives and enabled consideration of various trade-offs within and among program categories.

FIGURE 2
PROGRAM AND PROJECT ALTERNATIVES: WISCONSIN



SOURCE: Transportation Research Record #742,
Transportation Research Board, 1980.

Program options could also be developed varying the scope of improvements and standards. In Tennessee, a transportation needs study was done based on three system alternatives: desirable, AASHTO* and tolerable standards. The desirable system included a supplemental freeway system, whereas the tolerable level only provided for improvement of arterial routes. Total costs ranged from \$13.3 billion for the desirable system to \$8.9 billion for the tolerable system.

Development of more extensive program options in Arizona would enable the Transportation Board to make better informed decisions. Programming is a complex and technical function involving an estimated \$600 million to \$1 billion over a five-year period. Board members cannot make effective decisions and trade-offs among the highest priority needs with only one set of recommendations.

Information on Policy Impact
Is Lacking

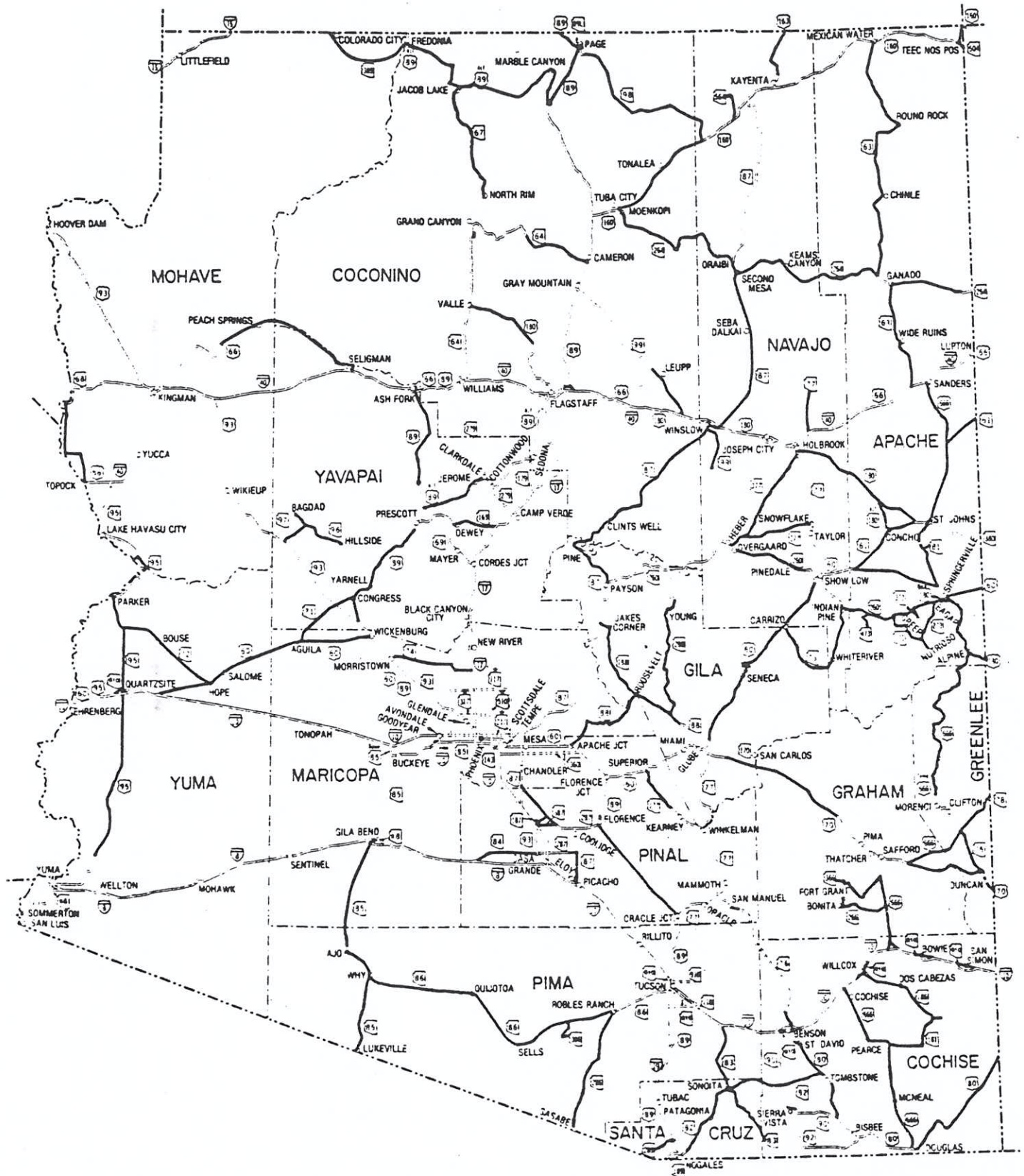
The Transportation Board also does not have adequate information on the effects of program policies since highway programming procedures do not include a formal evaluation of policy impacts. As noted in Finding I, many program policies have been developed primarily by the Priority Planning Committee or by ADOT staff or are implicit in the Department's technical rating formula. These policies range from a major decision to give preservation of the existing highway system priority over new construction to a more recent decision in 1980 not to fund rest area improvements.

The impact of program policy can best be illustrated by using pavement preservation as a case example. The Priority Planning Committee's fiscal year 1982-83 program was based on a policy that an adequate level of pavement preservation should be maintained. Adequate level was defined to mean full preservation** of high-volume (over 2,000 average daily traffic) roads, but less than full preservation of low-volume (under 2,000 average

* American Association of State Highway and Transportation Officials

** Full preservation refers to maintenance of road surface and ride quality in accordance with standards established by ADOT.

FIGURE 3
 LOW VOLUME ROADS ON THE STATE HIGHWAY SYSTEM



daily traffic) roads. Thus, the impact of this policy will be felt on low-volume roads which will not be fully maintained and preserved. As shown in Figure 3, these roads are a significant portion of the total State highway system, representing over 3,000 road miles, and include roads to major tourist attractions such as the Grand Canyon, Tombstone, Jerome and Kit Peak National Observatory.

ADOT staff involved in the priority programming process stated that policy evaluation is intrinsic to preparing each year's priority program. The impact of existing policies are discussed and the resulting program recommendations reflect either a reaffirmation or a revision of existing policies. However, audit staff observation of the priority programming process revealed that these discussions are internal to the staff and may not be presented to the Board. Thus, the Board which is responsible for the final decision on the priority program may not be aware of the impact of existing policies. For example, the potential health hazards of not funding rest area improvements were discussed at the staff level but not raised as an issue before the Board. The tentative Highway Program was presented to the Board assuming a certain level of pavement preservation.

Staff also stated that policies are governed by statutory criteria which are the basis for the technical rating formula (see page 25). However, the statutory criteria are broad in nature and do not preclude an evaluation of the short- and long-term impacts of program policy.

Board Lacks Statutory Authority to Monitor Projects

Although Arizona law requires the Board to approve the five-year highway construction program and to award contracts, there is no statutory requirement that the Board monitor the status of projects after contracts are awarded. As a result, the Board is not well informed of the progress and actual costs of projects, yet both progress and costs impact the viability and credibility of the five-year program. Projects which overrun schedules and costs eventually require the Board to change the program.

Prior to fiscal year 1981-82, the Transportation Board was not involved in overseeing implementation of the five-year highway program. Once the Board approved the program, implementation became the sole responsibility of the operational divisions within ADOT. In addition, although responsible for awarding contracts, the Board did not monitor actual construction costs of projects and all construction change orders were made without Board approval.

In fiscal year 1981-82, efforts were made to involve the Board in the monitoring of projects. Major change orders in construction contracts are now approved by the Board, and as of January 1982, quarterly progress and cost reports are prepared for Board review. However, the Board has not been assertive in requesting status reports and follow-up information from ADOT staff because project monitoring is not an official Board responsibility.

A national study of state procedures recommends that project monitoring be included in highway programming. Some states, such as Louisiana and New York, have incorporated monitoring of project implementation into the programming process. In these states, the entity responsible for developing the highway program is also responsible for overseeing its implementation. Board members interviewed during our audit also stated that project monitoring should be part of the Board's official responsibilities to ensure that the five-year program is a viable and effective document.

CONCLUSION

The Transportation Board does not have adequate program options and information on the impacts of program policy to enable it to make well-informed highway programming decisions. In addition, the Board lacks adequate authority to monitor the status of projects.

RECOMMENDATIONS

1. Staff recommendations made to the Transportation Board should include an adequate array of program options. The major advantages and disadvantages of each option should be analyzed to enable the Board to make well-informed decisions.
2. The highway programming process should include an evaluation of the impact of existing program policies. This evaluation should be conducted early in the programming process and results should be presented to the Transportation Board for consideration in developing the annual program.
3. A.R.S. §28-106.C. should be amended to include the monitoring of project status as a Board responsibility.

FINDING III

THE DEPARTMENT'S STATUTORY, TECHNICAL RATING FORMULA HAS LIMITED UTILITY FOR ESTABLISHING PROJECT PRIORITIES AND COULD BE SIMPLIFIED.

As part of our audit, we contracted with Cambridge Systematics, Inc., a transportation consulting firm, for assistance in evaluating the statutorily required technical rating formula. Results of the Cambridge Systematics study and our own evaluation indicate that the formula is limited in its utility and could be simplified.*

Rating Formula Is
Required By Law

Arizona Revised Statutes §28-111.B.1. requires the Priority Planning Committee to "establish a rating formula for setting priorities on transportation facilities construction projects."

Criteria to be considered in developing the formula include the following 12 factors:

- Sufficiency rating (road condition),
- User benefits,
- Economic factors,
- Continuity of improvement,
- Social factors,
- Land use,
- Aesthetic and environmental factors,
- Conservation factors,
- Safety factors,
- Life expectancy,
- Recreational factors, and
- Availability of State and Federal funds.

* For a summary of the Consultant Report, see Appendix I.

To comply with this requirement, the Department has developed a 200-point rating system which includes the following elements:

- A sufficiency rating which assesses road condition, safety and service	100
- An economic rating	65
- A traffic safety rating	25
- An environmental rating	<u>10</u>
Total Points	<u>200</u>

Arizona was the first state to formally use sufficiency ratings in project selection beginning in the late 1940s.

Formula Has Limited Utility

Although the technical rating formula is consistent with national standards and practices and can be a useful tool for project selection, it has several disadvantages:

- Application of the formula is limited to less than 12 percent of the total ADOT highway program budget;
- The formula cannot be used to evaluate trade-offs between different levels of service, different funding categories (new construction vs. rehabilitation) and urban and rural needs;
- The economic portion of the rating is limited in scope and does not provide an overall assessment of cost effectiveness;
- The environmental rating, 10 points assigned on an "all or nothing" basis, is even more limited than the economic rating in its scope and influence;
- There are few opportunities for policy input in developing scores, and policy choices which should be decided by the Transportation Board are obscured by the formula;
- Some intangible, nonquantifiable factors are not considered, which limits flexibility.
- The impact of various levels of investments and their relative cost effectiveness is not analyzed, both overall and for individual projects; and
- The formula cannot be used to evaluate new highway construction projects.

Three major disadvantages are discussed in more detail below:

1. Use of Formula Is Limited to 12 Percent of ADOT Highway Budget

Use of the statutorily required rating formula in selecting projects for the priority program is limited to a relatively small proportion (less than 12 percent) of ADOT's total highway funds. Only major reconstruction projects on the State's primary and secondary systems are subject to the rating formula. Bridge projects are rated by a formula developed by the Federal Highway Administration and pavement preservation projects are rated by ADOT's Pavement Management System (PMS). New construction, landscaping and irrigation projects and interstate projects are not subject to any technical rating system. All of these types of projects, however, are included in the five-year program.

Even within the Federal Aid Primary Category*, rated projects must compete with unrated projects. As a result, only one rated project costing \$3,700,000 was actually recommended by the Planning Committee for construction during the first year of the fiscal year 1982-83 program.**

Our observation of the programming process indicates that the results of the technical ratings are more useful in screening out projects rather than for selecting projects to be included in the highway construction program. Projects which fall below a minimum rating score are eliminated from consideration.

* Federal funds set aside for construction work on the State's major arterial routes such as U.S. 60 (Grand Ave.) and U.S. 89

** Two rated projects have priority to move into the fiscal year 1982-83 program if funds become available.

2. Technical Rating Formula Cannot Address Important Policy Issues

Technical rating systems cannot adequately address important policy considerations and other factors which are not quantifiable in nature. Overreliance on technical ratings can result in decisions unacceptable to top ADOT Management and the Transportation Board.

The case example cited earlier on page 8 illustrates this point. The Priority Planning Committee attempted to rate and compare the Superstition Freeway Project to other primary system projects but was unable to do so. The project was not included in the tentative program for fiscal year 1982-83 approved by the Committee on March 4, 1982.

In omitting the Supersition Freeway project, the Committee rigidly attempted to quantify all relevant factors and, in the process, ignored critical policy considerations. As a result, the credibility of both the Committee's recommendations and the highway programming process was questioned. One Transportation Board member stated that he "doubted" the process which resulted in the Committee's first program. Credibility and use of the technical rating formula have also been questioned by other Board members, ADOT staff and local government representatives.

3. The Formula Cannot Identify System-Wide Needs

Another limitation of the technical rating formula is that project ratings can neither predict the benefits of various levels of improvement nor identify system-wide needs for planning purposes. Ratings apply primarily to physical conditions on site-specific, existing primary and secondary systems roads. Ratings indicate only that a problem exists within a small portion of the total State highway system.

Thus, any changes in the rating formula need to be coordinated with a more comprehensive set of programming procedures. These procedures should consider the entire State highway system and various categorical and other program trade-offs which must be made by the Transportation Board and the Department.

The Formula Can Be Simplified

The Cambridge Systematics study concluded that the formula could be simplified by 1) eliminating the environmental rating, 2) combining the traffic safety rating with the sufficiency rating, and 3) dropping the economic rating and replacing it with a more comprehensive economic benefits analysis.

The technical rating formula used by ADOT was developed to satisfy detailed requirements and criteria established by law. These requirements restrict flexibility and appear to be unnecessary. A survey of Legislation in 14 model states revealed that only 6 provide for a technical rating system by statute. None of the states, however, has detailed statutory requirements including a technical rating formula similar to Arizona's.

ADOT has proposed that statutory criteria be retained in the statutes but that the Transportation Board and ADOT Director be given discretionary authority and flexibility in applying these criteria. Informal discussions with Legislative Council staff indicated that in giving the Board more flexibility, retaining specific criteria in law may be preferable to deleting the criteria entirely from the statutes since the latter approach could leave the Board's authority open to possible legal challenge as a vague and improper delegation of authority.

As part of its review, Cambridge Systematics compared Arizona's technical rating formula to systems used in three model programming states: Iowa, Illinois and Wisconsin. Results indicated that procedures in these states are more flexible and more sensitive to important policy considerations. In Iowa, for example, economic and environmental factors are treated as policy issues rather than reduced to numerical ratings. In Illinois road condition data are used to develop information and options helpful to top-level policy makers. These data are not used to develop a numerical sufficiency rating.

CONCLUSION

ADOT's technical rating formula used in highway programming is unnecessarily complex and can be simplified. The formula is limited to rating only major reconstruction projects and can obscure important policy considerations when rigidly applied.

RECOMMENDATIONS

1. The technical rating formula should be simplified by dropping the economic and environmental portions of the formula and consolidating the traffic safety rating with the sufficiency rating.
2. Social, economic and environmental factors should be treated as policy issues to be considered by the Transportation Board as part of the highway programming process.
3. A more comprehensive economic benefits analysis should be developed separate from the technical rating formula.
4. A.R.S. §28-111.B.1. should be amended to give the Transportation Board and ADOT Director more discretionary authority and flexibility in applying the statutory criteria in the Highway Programming Process.

FINDING IV

THE TRANSPORTATION BOARD AND THE PRIORITY PLANNING COMMITTEE DID NOT FULLY COMPLY WITH THE OPEN MEETING LAW PRIOR TO OUR AUDIT.

Work sessions held before, and sometimes after, the public meetings of the Transportation Board did not fully comply with the Open Meeting Law. Priority Planning Committee meetings also violated the Open Meeting Law since notices of meetings were not posted. Both the Transportation Board and the Committee have since taken corrective action and have gone beyond the legal requirement to solicit public and local government participation in the priority programming process.

Transportation Board Did Not Fully Comply with the Open Meeting Law

The Transportation Board has traditionally held a "work session" before, and sometimes after, its regular public meetings. The primary purpose of each work session was to keep Board members informed on transportation issues, many of which did not fall within the Board's official scope of authority (e.g. Department budget matters).

Work sessions however, did not fully comply with the Open Meeting Law (A.R.S. §38-431 et. seq.). Public notices indicated that the work sessions were "informal study sessions at which no action would be taken." However, the Board, at times, took actions in work sessions by deliberating and reaching consensus on transportation issues scheduled or expected to come before the Board for a vote in official sessions. According to an opinion of the Legislative Council dated March 23, 1982, these collective decisions and deliberations constitute "legal actions" subject to the provisions of the Open Meeting Law:

"As used in the open meeting law, the term legal action should be construed broadly and is not only the mere formal act of voting but includes discussions and deliberations by members of the public body prior to the final decision. 75 Op. Attorney General No. 8 (1975-1976)."

During the course of our audit, the Transportation Board eliminated the use of work sessions and now conducts all business in official Board meetings.

Priority Planning Committee
Was Also in Violation

The Priority Planning Committee, established by A.R.S. §28-111 and consisting primarily of ADOT divisional managers, did not comply with the Open Meeting Law at the time of our audit. In an opinion dated January 20, 1982, the Legislative Council stated that the Priority Planning Committee was subject to the requirements of the Open Meeting Law:

"The definition of 'public body' for purposes of the so-called 'open meeting law' includes a 'standing, special or advisory committee' of a board which is supported by or which expends tax revenues. The transportation board is supported by and expends tax revenues (see, e.g., A.R.S. §28-105), and since the committee is an adjunct of the board, it falls within the definition of 'public body.' The committee is, therefore, subject to the substantive and procedural requirements of the open meeting law, including public notice (A.R.S. §38-431.02) and written minutes (A.R.S. §38-431.01) of meetings."

The Committee, however, neither posted required public notices nor took adequate minutes of its meetings.

In February 1982, the Committee took corrective action and now posts notice and takes minutes of all meetings.

Local Government and Public Input into
Priority Programming Was Increased

Prior to fiscal year 1981-82, public and local government participation in the priority programming process was limited since the Priority Planning Committee was not posting public notice and notifying interested agencies of its meetings. In addition to taking corrective action to comply with the Open Meeting Law, the Committee, with approval of the Board, has taken additional steps to encourage local government participation in the priority programming process. All Councils of Governments within the State (regional associations of local governments) are now informed of all Committee meetings, and have an opportunity to review committee decisions and recommendations before they are finalized by the Board.

CONCLUSION

Both the Transportation Board and the Priority Planning Committee did not fully comply with the Open Meeting Law prior to our audit. Corrective action has since been taken.

RECOMMENDATIONS

1. The Transportation Board should continue to comply with all requirements of the Open Meeting law and consult routinely with the Assistant Attorney General assigned to ADOT when questions regarding compliance arise.
2. The Department should continue to encourage local government participation in the priority programming process.

AREAS FOR FURTHER AUDIT WORK

Our review of the Highway Programming Process resulted from preliminary work on the Department's Transportation Planning Division which staffs the highway programming function.

During the course of this preliminary work, we identified several potential areas for further audit work in the Planning Division. These areas, which were outside the scope of our audit (see page 4), are as follows:

- Whether the staffing level of the Planning Division is adequate and appropriate,
- The need for a separate cost accounting system in the Transportation Planning Division, and
- Whether the local government assistance functions in the Planning Division should be consolidated with related functions in other ADOT Divisions.



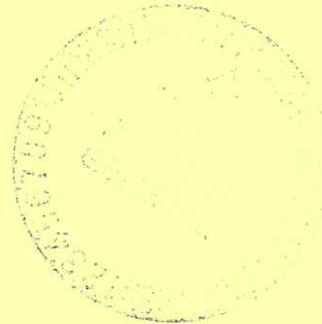
BRUCE BABBITT
Governor

ARIZONA DEPARTMENT OF TRANSPORTATION

206 South Seventeenth Avenue Phoenix, Arizona 85007

October 18, 1982

WILLIAM A. ORDWAY
Director



Mr. Douglas R. Norton
Auditor General
111 West Monroe, Suite 600
Phoenix, Arizona 85003

Dear Doug,

Thank you for the opportunity to review the revised preliminary report draft of the performance audit of the Arizona Department of Transportation's Highway Programming Process. I would again like to commend your staff for the fine job they did on this audit in the short time they had to do the work. As I indicated in an earlier letter, many of their suggestions fall right in line with our more recent efforts to improve the process. We also appreciate the constructive discussion of the first draft we had with your people.

The attached comments are provided to reflect our views on the report findings. One overall comment is provided as well as comments on each major finding. It is my understanding that these comments will be appended to your final report.

Thanks again for the opportunity to comment and for the very professional manner in which your staff conducted themselves throughout the course of the audit.

Sincerely,

W. A. ORDWAY
Director

WAO:vn

cc: Transportation Board Members
Executive Committee Members



ADOT'S COMMENTS ON AUDITOR GENERAL'S PERFORMANCE AUDIT
OF THE ARIZONA DEPARTMENT OF TRANSPORTATION'S
HIGHWAY PROGRAMMING PROCESS

We suggest the report provide more background on Board and staff work which had already identified many of the ideas outlined in your report for improving the Priority Planning Process. ADOT began late in 1980 a concerted effort to identify opportunities for improving the process. A number of issue papers were developed, and by early 1982 the Priority Planning Committee and the Transportation Board had approved a formal set of Priority Planning Process policies. Examples of these policies include:

1. Early involvement by the Transportation Board and the Director in program direction setting;
2. Alternatives on such items as pavement preservation levels, Interstate completion funding, and the use of bonding to supplement the construction program revenues;
3. Strengthened public participation in the programming process.

Board and staff strongly support this effort to improve the Priority Planning Process within the existing statutes. During the last program cycle, we have successfully implemented many of these improvements which included some suggested in your report. We also are working hard to improve the process for next year's program.

FINDING I - BECAUSE OF WEAK STATUTORY ROLES, THE TRANSPORTATION BOARD AND THE ADOT DIRECTOR DO NOT HAVE ADEQUATE CONTROL OVER HIGHWAY PROGRAMMING DECISIONS.

ADOT POSITION - PARTIALLY CONCUR WITH FINDING

While we agree with the audit recommendation that statutory authority regarding program development should be clarified for both the Board and Director, we do not share the conclusion that the Transportation Board and Director currently are not exercising adequate control over highway program decisions. Roles have and continue to evolve for all participants in the process. When the current statutes were first enacted, the process tended to be highly technical in nature, but over the years the involvement of both the Transportation Board and Director has increased continually with major policy decisions being important to the continued improvement of the program. Documentation of this involvement has been poor until recently.

Under existing statutes, the Board has broad powers with respect to program development. It has the specific authority to approve and adopt the Five-Year Priority Program and to award all construction contracts for transportation facilities. The statutes also are quite clear that the Priority Planning Committee is in the role of making construction project

priority recommendations to the Board, but does not have the final decision on those recommendations. While the Board currently has the authority to control the highway construction program project decisions, and while it now sets more definitive and formal program policies than in the past, Board members are nevertheless uncomfortable with current statutes. We agree it will help to give the Board clear authority to establish policy that governs the program along with clear authority to monitor the program's status. While we implicitly believe the Director also has authority to control the Highway Program, we agree that clarifying the statutes as recommended in the report is a good recommendation.

Our improved and formalized Priority Planning Process policies mentioned above clearly define a further strengthened role for the Director and the Board in setting program direction early in the programming process. The Board is expected to approve the program policy direction, and the Director is to review all the Priority Planning Committee's recommendations before they go to the Board. Again, the recommended statutory clarification will be helpful to these efforts.

FINDING II - THE TRANSPORTATION BOARD DOES NOT HAVE ADEQUATE INFORMATION NOR SUFFICIENT PROJECT MONITORING AUTHORITY TO PROPERLY FULFILL ITS HIGHWAY PROGRAMMING RESPONSIBILITIES.

ADOT'S POSITION - PARTIALLY CONCUR WITH FINDING

We agree that clarification of the statutes regarding monitoring authority would be helpful, but the issue of whether the Board currently has adequate program options and alternatives and lacks information on the impacts of program policies is a matter of judgment. As stated in our comments under Finding I, the whole priority program process has been evolving with control and information improving gradually for the first several years, and significantly in recent years. Department staff and the Transportation Board are working closely together to assure that the Board does have adequate program options and information on the impacts of program policy to enable it to make well-informed highway programming decisions.

The Board plans to spend more time on programming issues to assure full understanding and we intend to improve the methods of the staff's presentation of material to the Board. We think that we are making some major strides forward in these areas.

As far as program monitoring is concerned, the Board receives monthly highlights, quarterly status reports, and an annual report regarding the program. Also, staff currently is developing a monthly project cost status report at the Board's request.

FINDING III - THE DEPARTMENT'S STATUTORY, TECHNICAL RATING FORMULA HAS LIMITED UTILITY FOR ESTABLISHING PROJECT PRIORITIES AND COULD BE SIMPLIFIED.

ADOT'S POSITION - CONCUR WITH FINDING

We agree with the recommendation that A.R.S. 28-111.B.1 should be amended to give the Transportation Board and the ADOT Director more discretionary authority and flexibility in applying the statutory criteria in the Highway Programming Process. We also want to emphasize the need for the statutes to retain a broad list of criteria to be considered. Our principal reason for supporting retention of the criteria in the statutes goes back to the basic reasons for the existing process and technical criteria. The current statutes are the result of perceived abuses of the project selection process, which resulted in poor program stability. If the statutes are clarified and simplified, it is imperative that an appropriate balance of policy and technical considerations be retained. Possibly the current process has seen the swing of the pendulum too far to the technical side, but care should be taken that it not swing back too far the other way either and throw out what has been gained.

FINDING IV - THE TRANSPORTATION BOARD AND THE PRIORITY PLANNING COMMITTEE DID NOT FULLY COMPLY WITH THE OPEN MEETING LAW PRIOR TO OUR AUDIT.

ADOT'S POSITION - CONCUR WITH FINDING

We would like to point out that public notices for the Transportation Board's work sessions (now no longer used) were posted in advance. The sessions were open to the public and press, and minutes were taken.



ARIZONA DEPARTMENT OF TRANSPORTATION

206 South Seventeenth Avenue Phoenix, Arizona 85007

October 18, 1982

BRUCE BABBITT
Governor

WILLIAM A. ORDWAY
Director

TRANSPORTATION BOARD

R.R. "Bob" Evans
Chairman
Lawrence M. Hecker
Vice Chairman
John W. McLaughlin
Lynn M. Sheppard
Hal F. Butler
Sondra Eisberg
Ted Valdez, Sr.



Mr. Douglas Norton
Auditor General
111 West Monroe, Suite 600
Phoenix, Arizona 85003

Dear Mr. Norton,

The State Transportation Board accepts the recommendations of the revised draft which followed our September 30 meeting with members of your staff.

We still do not believe this draft reflects two important issues: first, that some of the recommendations were being corrected at the time of the audit and, second, the draft fails to recognize the unusual conditions that existed during the reporting period. This was brought about by the recent tax legislation, the proposed referendum to repeal the gas tax, and the uncertainty as to the continuity of Federal highway legislation, as well as Federal obligation levels.

As expressed in our September 30 meeting, I do feel that a constructive atmosphere certainly existed between our Board Members and your staff.

Sincerely,

R. R. EVANS
Chairman

RRE:bg

cc: W. A. Ordway



APPENDIX I

CONSULTANT EVALUATION OF THE ADOT
PRIORITY RATING FORMULA

Evaluation of the Adequacy of the Highway
Priority Rating Formula Used By the
Arizona Department of Transportation

Prepared for
The Arizona Office of the Auditor General

Prepared by
CAMBRIDGE SYSTEMATICS, INC.
238 Main Street
Cambridge, Massachusetts 02142

with assistance from
Vanasse-Hangen Associates
184 High Street
Boston, Massachusetts

Final Report

June 2, 1982

EXECUTIVE SUMMARY

Overall Conclusions

The development of a yearly highway capital and maintenance program is a difficult and complex task. It is difficult because the supply of available resources is usually much smaller than the demand for improvements. It is complex because there are so many factors that must be considered in equitably allocating scarce resources each year.

There are at least one dozen highway program categories for which specially earmarked funds, both state and federal, are available each year in Arizona. The priority rating formula discussed in this report is applied to only two of those highway categories, the primary state system and the secondary state system (but only 50 percent of that system).

The total projected highway fund revenues for FY1983 is approximately \$361,170,000, of which about \$138,229,000 is directly available to ADOT for highway programs under its jurisdiction. Of that amount, only about \$17,386,000 is projected to be available for state primary and secondary system projects that are subject to the priority rating formula. This amounts to less than 12.5 percent of the ADOT construction budget, since not all Federal-aid primary projects are rated, and less than 5 percent of the total highway fund.

Thus, the evaluation of the priority rating formula must be placed in its proper perspective. It is a useful and objective analysis tool, but it is only one part of the overall set of procedures used to establish priorities for the highway construction and maintenance program. Other priority

rating procedures, some comprehensive but others perhaps less so, are used by necessity for over 80 percent of the total highway program.

A major issue that must be considered in evaluating the process used to establish highway program priorities is the manner in which all those programs are eventually combined into a single package of highway priorities. That series of actions, which results in the preparation and eventual publication of the 5 Year Construction Program, is the culmination of a long series of activities that are mandated by State and Federal laws and regulations.

While there are specific changes or modifications that might be considered to the current priority formula, we would strongly suggest that they only be considered in the context of a broader review of the entire programming process. The top priority for ADOT may well be longer term improvements to the process for developing the overall program rather than immediate changes to the priority formula used for a relatively small portion of that program.

The Priority Rating Formula

The detailed evaluation of the priority rating formula is contained in Section 2.0 of this report. The ADOT procedure is compared to three "benchmark" states in section 3.0. We have responded to the fifteen questions raised by the Auditor General in Section 4.0. Based upon our review, we conclude:

1. The current priority rating formula does provide an adequate tool to assist in establishing reconstruction priorities on the Primary and Secondary state highway systems. It also appears to meet the spirit and intent of the various Arizona Revised Statutes that mandate its use.

2. The formula could be simplified and probably result in basically the same results, keeping in mind that it is applied to only about 12 percent of the total ADOT construction program. The simplification could take place by:

- Dropping the environmental factor completely, and using a flagging procedure when a potential project might be affected by its environmental impacts;
- Combining the traffic safety factor with the sufficiency rating;
- simplifying the economic rating, or dropping the current procedure and replacing it with a more comprehensive analysis of needs within the framework of the total statewide transportation program.

3. Arizona is among a handful of states that use a priority rating formula as the primary basis for selecting certain projects. The Planning Division feels that the Department has depended upon the formula for making programming decisions, regardless of opposition that might occur. However, there is no guarantee that this traditional approach will continue to remain as firm, because of growing concern in the Legislature with ADOT's programming process and increased pressures for a more comprehensive assessment of total transportation needs. In fact, many states are now rejecting a strict formula approach as too rigid and unresponsive to a range of critical policy issues which must be addressed.

4. Although key ADOT personnel who were interviewed felt that the Department does not feel overly constrained by the rigidity of the current procedures, a potential emerging problem might be the tendency of the Legislature to mandate more restrictive programs or program categories (such as the 15 percent set-aside for non-Interstate freeways in Phoenix and Tuscon). In fact, these Legislative restrictions may reflect a concern by some outside the Department that the current formula is indeed too rigid to

address key policy issues. The Department should respond to this concern by imbedding technical priority procedures within a much broader programming process that explicitly examines the mix of project types (resurface, reconstruction, new construction, etc.) and geographic allocation of funds. If the trend toward more Legislative constraints continues, it will diminish the ability of the Department to address issues concerning the "bigger picture" of total transportation needs.

5. The current priority rating formula does not provide the ability to address program tradeoffs such as:

- urban vs. rural
- new construction vs reconstruction vs. other levels of improvement
- corridor, regional or statewide social, environmental or economic impacts

6. There is some uncertainty concerning the points at which policy considerations are inserted into the priority making process. However, it should be emphasized that the current formula does represent a very explicit policy statement concerning project objectives and priorities. The credibility of the formula will depend on the extent to which the policy position that the formula represents is understood and supported. While currently the Planning Department feels that the formula is credible, the complexity of the approach makes it very difficult to really understand the policy implications of the rating method without a detailed understanding of the components of the formula. Clearly many individuals within the Department do not have such a detailed understanding of the approach. In any case, if new policies are to be evaluated periodically, the formula will have to be adjusted and a more flexible approach to setting priorities may be desirable. There does appear to be some acknowledgement of this concern, and efforts

are now being made by ADOT to make this policy input more explicit.

7. On balance, it is our opinion that ADOT applies the priority rating formula in a professional manner, is aware of the deficiencies in the process, and is working to address those problems. The ADOT top management also recognizes the importance of developing priorities for all the many different program categories within the context of total program needs.

Recommendations

ADOT recognizes the necessity for developing a longer term transportation plan that gives broader consideration to the social, environmental and economic impacts of the total transportation system. The Advanced Planning Section of the Division of Transportation Planning is in the process of developing analytical tools that will assist in achieving those objectives. It is also our understanding that the Division is developing procedures to assist in linking the 5 Year Highway Program to a longer range plan. By doing this it will become more reasonable to evaluate both short and long term priorities within the context of total statewide, corridor and regional needs.

This is definitely a step in the right direction, which should be pursued vigorously. However, in order to avoid any unnecessary constraints on that process it would be prudent to avoid establishing any further constraints on the overall highway priority programming process. ADOT should be given the flexibility to allow it to determine how to evaluate the dozen or more programs that now comprise the total state highway system, and how the somewhat fragmented approach currently used can be combined into a more coherent set of procedures.

A critical component of a more comprehensive programming process will be a clear understanding of the roles of the Department, Transportation Board, and Legislature in setting policy and making final program and project choices. While clear policy direction is an important ingredient in an effective programming process, the process itself should be used to explicitly examine different policy options before final policy directives are set. By examining the tradeoff between different allocations of funds to program areas, types of projects, and geographic areas, ADOT can play a central role in assisting all the appropriate groups set overall highway investment policy.

In short, we recommend that the Department undertake a comprehensive review of all its programming and priority setting functions and establish a more integrated approach to setting priorities in all program areas. Any approach that is developed should be reviewed and revised as appropriate on an annual or biennial basis. It is in the context of such a review that we would also recommend some specific changes to the priority formula as discussed above.