National Cooperative Highway Research Program

NCHRP Synthesis 246

Outsourcing of State Highway Facilities and Services

A Synthesis of Highway Practice

Transportation Research Board
National Research Council

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Synthesis of Highway Practice 246

Outsourcing of State Highway Facilities and Services

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

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PREFACE

A vast storehouse of information exists on nearly every subject of concern to highway administrators and engineers. Much of this information has resulted from both research and the successful application of solutions to the problems faced by practitioners in their daily work. Because previously there has been no systematic means for compiling such useful information and making it available to the entire community, the American Association of State Highway and Transportation Officials has, through the mechanism of the National Cooperative Highway Research Program, authorized the Transportation Research Board to undertake a continuing project to search out and synthesize useful knowledge from all available sources and to prepare documented reports on current practices in the subject areas of concern.

This synthesis series reports on various practices, making specific recommendations where appropriate but without the detailed directions usually found in handbooks or design manuals. Nonetheless, these documents can serve similar purposes, for each is a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems. The extent to which these reports are useful will be tempered by the user's knowledge and experience in the particular problem area.

FOREWORD

By Staff
Transportation
Research Board

This synthesis presents information on the current outsourcing practices of state departments of transportation with regard to the transfer or placement of work that might previously have been done by state staff, to contractors or consultants. It will be of interest to transportation agency administrators, financial managers, functional area managers, and others who are concerned with the productivity and financial management of state transportation agencies. It will also be of interest to contractors and consultants, as well as to other state agency administrators and legislators.

Administrators, engineers, and researchers are continually faced with highway problems on which much information exists, either in the form of reports or in terms of undocumented experience and practice. Unfortunately, this information often is scattered and unevaluated and, as a consequence, in seeking solutions, full information on what has been learned about a problem frequently is not assembled. Costly research findings may go unused, valuable experience may be overlooked, and full consideration may not be given to available practices for solving or alleviating the problem. In an effort to correct this situation, a continuing NCHRP project, carried out by the Transportation Research Board as the research agency, has the objective of reporting on common highway problems and synthesizing available information. The synthesis reports from this endeavor constitute an NCHRP publication series in which various forms of relevant information are assembled into single, concise documents pertaining to specific highway problems or sets of closely related problems.

This report of the Transportation Research Board discusses the current outsourcing practices used by state transportation departments in several functional areas: professional design services, right-of-way acquisition, construction, operations and maintenance, and training and other human resources activities. The policies and decision-making

practices related to outsourcing, including the methods for determining feasibility and the impediments to outsourcing are discussed. The synthesis also presents evaluative information on the cost-effectiveness of outsourcing, as well as the benefits that are derived, and the problems that have been identified by the agencies. The issues and practices related to public-private partnerships are also discussed.

To develop this synthesis in a comprehensive manner and to ensure inclusion of significant knowledge, the Board analyzed available information assembled from numerous sources, including a large number of state highway and transportation departments. A topic panel of experts in the subject area was established to guide the research in organizing and evaluating the collected data, and to review the final synthesis report.

This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As the processes of advancement continue, new knowledge can be expected to be added to that now at hand.

CONTENTS

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Valuable assistance in the preparation of this synthesis was provided by the Topic Panel, consisting of Thomas F. Barry, Jr., Assistant Secretary for Finance and Administration, Florida Department of Transportation; David L. Dye, Chief Maintenance Engineer, Washington State Department of Transportation; Ralph Erickson, Economist, Federal Highway Administration; John Gerner, Highway Engineer, Office of Traffic Management and ITS Applications, Federal Highway Administration; Robert Harris, Administrative Services Officer, Arizona Department of Transportation; Richard Moeller, Highway Engineer, Federal Highway Administration; Robert North, Sr., Director of Right-of-Way, Iowa Department of Transportation; Mehendra G. Patel, Director, Bureau of Design, Pennsylvania Department of Transportation; Jon Williams, Senior Program Officer, Transportation Research Board; and Carl R. Williams, Deputy Secretary for Transportation, California Business, Transportation and Housing Agency.

This study was managed by Sally D. Liff, Senior Program Officer, who worked with the consultant, the Topic Panel, and the Project 20-5 Committee in the development and review of the report. Assistance in Topic Panel selection and project scope development was provided by Stephen F. Maher, P.E., Senior Program Officer. Linda S. Mason was responsible for editing and production.

Crawford F. Jencks, Manager, National Cooperative Highway Research Program, assisted the NCHRP 20-05 staff and the Topic Panel.

Information on current practice was provided by many highway and transportation agencies. Their cooperation and assistance are appreciated.

OUTSOURCING OF STATE HIGHWAY FACILITIES AND SERVICES

SUMMARY

Trends toward privatization of public services, and other pressures to downsize government in recent years have had an impact on transportation agencies. The agency response typically has been to transfer work that might otherwise have been done by agency staff out to contractors and consultants. This synthesis examines current practices in such outsourcing activities, considering not only traditional methods of contracting but also the newer methods of privatization, such as public-private partnerships. State transportation agencies were surveyed to determine the reasons for and extent of outsourcing, the expected trends or changes, the methods of monitoring and evaluation in use, and the lessons that have been learned.

The number of survey responses was sufficient to demonstrate many characteristics of the outsourcing experience. First, a long history was made evident, beginning with the earliest days of construction contracting before World War II, continuing with a postwar growth in contracted design and the later moves in the 1970s into contract maintenance. Administrative functions began to be contracted in greater numbers in the 1980s, and contracted operations activities are now showing growth. Thus, the frequency of outsourcing continues to grow and spread across the spectrum of transportation agency functions in more and more states.

Nevertheless, few activities are wholly outsourced, and the major part of most activities is performed in-house. For one-third of the reported functions that are outsourced, less than 20 percent of the total work volume in the activity is contracted.

Within activity groups, such as Administration or Design, survey responses showed a wide range in the dollar volumes of outsourced work. This sometimes represents variation in the types of tasks being contracted out, but it also suggests variability among the states in the levels of outsourcing. Outsourcing appears to vary between states in both the activities contracted and the proportions of work that are involved. Such diversity presumably reflects the diversity in other attributes of the states and their transportation agency responsibilities.

Many factors influence the nature and volumes of outsourcing. Most important is staff constraints, the result of either increased workloads or reductions in staff occasioned by the pressures noted above. Another influence is the need to obtain the specialized skills or services that are not available in-house. Policy or legal requirements were the other significant influences. Only in the maintenance area were cost considerations frequently cited as a basis for outsourcing.

Survey respondents provided mixed views on the trends in outsourcing. A majority reported that either legislation or policy mandated more outsourcing in the future. In many cases, this was associated with requirements for staff downsizing. But other responses were noncommittal or indicated that increased outsourcing was not anticipated.

Not surprisingly, considering the long experience with contracting, procedures for obtaining contract services are standardized and well documented. The importance of monitoring, performance evaluations, and quality assurance is recognized in traditional areas of contracting. Contractor evaluation procedures are highly formalized in some states, not

only for construction contracting but for professional services also. Survey responses suggested much variability between states in the procedures themselves and in their application to preaward or prequalification processes. It was not readily apparent from survey responses how formally the monitoring and evaluation procedures may be handled in the newer areas of outsourcing, such as Administration or Operations tasks. In such practices as prequalification and use of alternative bids and value engineering, the survey responses again indicated substantial variance among the states.

The major benefit provided by outsourcing was reported to be the ability to supplement in-house staff in meeting departmental workloads and schedules. Other benefits were: obtaining specialized skills or equipment, cost savings, and a scattering of other values such as obtaining third party views and public relations. Most respondents reported that no studies had looked into the impact of outsourcing on department staff.

Beginning in the 1980s, new procedures were evolving that allowed public agencies to enlist private sector support in the tasks of meeting highway needs. The term "public-private partnerships" emerged to describe a range of mechanisms, from agreements with property developers to those permitting private construction of major highway facilities. While the present survey revealed few examples, in a limited number of states, the successful execution and development of such partnerships has been well-documented in the literature. The lessons that have been learned from both successes and failures are available for study.

Several research needs were identified. Three suggested topics include: methods for identifying core competency of state transportation agencies; a study of models for assessing whether to outsource; and examination of the in-house human resource impacts of outsourcing. In a changing world, such studies may be useful in shaping the evolving forms of transportation agencies.

CHAPTER ONE

INTRODUCTION

BACKGROUND

The last decade has seen a worldwide trend toward privatization. This change may have been most striking in the nations of the former Soviet bloc, but it has been manifested elsewhere as well. Western European nations have converted previously nationalized activities to private ones, as have governments in Asia, Australia, and the Americas. Among the public services now supplied by private sector organizations are many related to transportation.

In the United States particularly, privatization has been accompanied by another trend. Most major industries in the nation's private sector have become increasingly concerned with "downsizing" and "outsourcing." A search of the Business Periodical Index for the past few years revealed more than 1,200 citations related to these issues. Spillover has clearly occurred into the public sector, and into transportation. For example, the Texas Department of Transportation has reduced its workforce in the 1990s from more than 15,000 employees to approximately 13,000. The Virginia DOT staff has decreased from over 11,000 to 9,500 employees (*1*). California DOT has reduced its staff from approximately 20,000 in January, 1994 to 17,000 in June 1996.

A third trend has also been evident in the highway sector of the United States transportation economy. Emphasis has shifted from the peaks of capital investment in building the Interstate Highway System to a focus on the operation and maintenance of all highway systems.

These three tendencies—privatization, downsizing, and changing focus—have combined to influence the way in which American highway facilities and services are currently being managed and delivered. Interest emerged in the 1980s in the possibilities for privatizing a variety of highway services. For example, a presentation on highway maintenance contracting at the 1989 Annual Meeting of the American Association of State Highway and Transportation Officials (AASHTO) quoted the Report of the President's Commission on Privatization as follows: "Privatization is growing because it delivers major savings or improves service, quality, or both to local taxpayers" (*2*).

Contracting out services was not a new idea at that time. The precedent for contracting by state highway organizations has been a long one. Most highway construction and reconstruction has been handled that way by virtually all state highway agencies for more than seven decades. Since World War II, the construction and operation of many toll roads by public authorities accountable to bondholders might also be viewed as a form of privatization. In recent years, more and more varied activities have been given out to contractors rather than being performed in-house. Tracing such trends, the author of a *TRNews* article in the mid-1980s noted: "The use of contractors to perform state transportation construction, operation, and maintenance activities has increased. . . . Almost every type of activity, with the exception of policy formulation and management decision-making, is being, at least in part, contracted out by one or more states" (*3*).

It was in view of this background that the scope for the present synthesis was developed.

PROJECT SCOPE AND OBJECTIVES

This synthesis focuses on the outsourcing of highway facilities and services. The activity of outsourcing is described as including contracting out, commercialization, and privatization. The objectives are to identify the extent to which such activities are undertaken by the states, the reasons for undertaking them, the actions that have been considered beneficial, and the relative costs and cost-effectiveness. The synthesis also identifies the techniques and procedures that agencies use when deciding to use public or private sector resources for accomplishing an activity or mission, and the evaluation techniques used. In addition, it addresses the following issues: legal concerns, statutory requirements, impact on employee unions, risk-sharing, implementation costs, and effects on the public.

The range of functional areas studied includes professional design services, right-of-way acquisition, operations and maintenance contracting, and training and other human resources activities. A survey of state transportation agencies was conducted to ascertain the following: the degree to which outsourcing is used, how long contracting has been in effect, the estimated percentage of use, and expected trends or changes.

Study Procedures

A literature review was carried out, in addition to the survey of state transportation agencies. The literature review, developed from a search of several data bases, provided the references cited, as well as the background material presented in the bibliography. Dealing with a subject that is evolving in fast-changing times and circumstances, the survey results are akin to a snapshot of a moving target; the results, therefore, represent conditions at one point in time.

To accomplish the purpose and objectives of this synthesis, a great deal of information was requested from state departments of transportation. The survey questionnaire developed for this purpose is in Appendix A. It consists of two parts: Part One addresses the policy and qualitative aspects of outsourcing practices and Part Two requests more quantitative data. The survey was sent to each of the 50 state departments of transportation and was distributed to several offices within

each agency. The introductory and transmittal remarks made clear that although a great deal of effort would be necessary to provide data, full and complete responses to the entire survey form would be of most value.

Survey Response Rate

In all, 34 states provided information for this study (See Appendix B). In a few cases, the responses represented information from the entire organization consolidated on one form. In other cases, information was transmitted directly from separate units within the agency. For example, the responses from the New York State Department of Transportation included all Part Two information on one form, while six Part One responses were sent back from different offices.

A total of 83 responses from all 34 states were received with Part One completed. Replies from 26 states supplied supplementary enclosures; most were consultant or contractor evaluation forms. Fifty-five replies, from 30 states, provided Part Two information. It was obvious in some cases that the data represented only the activities of one or two divisions, rather than that of the entire department. Thus, the total extent of contracting experience for some DOTs was considerably underreported. However, the database for Part Two ultimately included more than 400 entries on activities that had been contracted out.

Although the survey responses are incomplete in representing national levels of all contracted activity, the information may nonetheless be representative of the contracting scene in many respects. Chapter 2 offers an overview of the quantitative material, and subsequent chapters deal with the qualitative and administrative aspects of outsourcing.

Definitions

The term "outsourcing" describes a number of activities that may include privatization, commercialization, contracting out, and public-private partnerships. Definitions for such terms were found in several sources.

Going Private: International Experience with Transport Privatization, characterized privatization as follows: "Privatization can assume many different forms, but three are most common: the sale of an existing state-owned enterprise; use of private financing and management rather than public for new infrastructure development; and outsourcing (contracting out to private vendors) public services previously provided by public employees" (*4*).

Guidance for State Implementation of ISTEA Toll Provisions in Creating Public-Private Partnerships, offers a glossary of terms which includes a very similar definition of privatization: "one of the following: (1) the private development and operations of public-use infrastructure and the provision of public services that have traditionally been provided by State; (2) contracting out of services, which does not usually include private sharing of financial responsibility; (3) the sale of State-owned enterprises to private firms, with the expectation that the buyer will improve operating efficiency, invest new capital, and take full advantage of the enterprise's commercial development potential, all at lower cost to the State" (*5*).

Without precisely defining the term "commercialization," the Final Report of the AASHTO Committee on Highways Task Force on Commercialization of Interstate Highway Rest Areas (*6*), describes its nature as applied to travel service rest areas (TSRA). In these situations, the state would specify the design standards, operational requirements, and fee and lease agreements required in the leasing of land on public rights-of-way to private developers for TSRA development and operation. The state would also specify the rates of return, fee structures, and minimum utilization periods.

The Executive Summary of "California Competes" (a workbook for public agency managers to aid them in determining whether to retain, improve, outsource, or transfer agency activities) describes outsourcing in this way: "Some activities clearly support a department's mission, but cannot be provided by state government cost-effectively. These are opportunities for productive outsourcing. Although the performance of these services is transferred, responsibility to the consumer for the quality, reliability and cost-effectiveness of these services remains with the department. . . . Outsourcing is accomplished in many ways, most commonly through contracts or partnerships with the private sector, the nonprofit sector, another level of government or another department" (*7*).

Based on the foregoing, with consideration of the purpose and objectives, the following definitions are used in this synthesis of practice:

- *Outsourcing* is defined as contracting with either private or public sector vendors and service suppliers to obtain services that have traditionally been, or would otherwise be, performed by staff of the state transportation agency. Subject to contractual arrangements, the responsibility to the public for the quality, reliability, and cost-effectiveness of the services may still remain with the public agency. An alternative term used to describe the same function is "contracting out."
- *Commercialization* is defined as a subset of outsourcing activities, in which the transfer of service provision is made from the public agency to a private for-profit organization, whose activities are nevertheless still controlled and regulated by the public agency in an ongoing relationship.
- *Privatization* is defined most broadly as a public policy designed to transfer activities from the public to the private sector. The actions may take several forms and use various mechanisms in its implementation.
- *Public-Private Partnerships* is an expression that has come into use for describing certain forms of privatizing actions or relationships involving public agencies and private interests. Possibly not subject to precise definition, these activities are described in chapter 6.

ORGANIZATION OF THE SYNTHESIS

The current practices of state transportation agencies with regard to outsourcing are described in the following chapter.

Chapter 3 describes how transportation departments make the decision to outsource, and the advantages and disadvantages of this practice. The procedures for procuring services by outsourcing are described in chapter 4. Chapter 5 presents the evaluation of outsourcing activities, including cost-effectiveness measures and effects on staffing. A discussion of public-private partnerships is contained in chapter 6. Conclusions from the synthesis findings are presented in chapter 7. The appendixes include the survey questionnaire (Appendix A) and the list of respondents (Appendix B). Selected examples from state practice are found in Appendixes C through I; excerpts from the AASHTO Partnership Summary are in Appendix J.

CHAPTER TWO

CURRENT PRACTICES IN OUTSOURCING HIGHWAY ACTIVITIES

This chapter describes the characteristics of the outsourcing practices engaged in by state transportation agencies, as reported in the survey responses. Part Two of the survey form is the source of most of the material that follows. Respondents were asked to provide information regarding the history, nature, and influences affecting the outsourcing of specific activities.

Of the 30 states that returned Part Two forms, at least half supplied very complete information. Ten or more responses listed more than 20 kinds of activities that were being outsourced. In some cases, the replies listed only one or two activities within a single division of the agency. As a result, although tables in this chapter are indicative of current practice, they do not represent the full extent of national experience in outsourcing.

Findings from any such survey are apt to reflect the diversity among states in such characteristics as their geographic and demographic natures, historical and cultural aspects, and state laws. Additionally, states vary greatly in the highway network responsibilities assigned to their state transportation agencies. Thus, the outstanding characteristic of the survey data is the variation reported in the nature and degree of outsourcing activities.

OVERVIEW OF PRACTICE

Outsourcing by state highway agencies encompasses an impressive volume of work and a wide range of activities. One indication is given by the following statistics and table supplied by the Arizona Department of Transportation: "ADOT historically contracts approximately $1 Billion annually . . . [and] awards and manages an average of approximately 1100 private sector contracts per year . . . . " While construction accounts for most of the dollar volume, Table 1 shows the wide range of Arizona's contracted highway services and the proportions of work contracted out.

TABLE 1

ACTIVITIES OUTSOURCED BY ARIZONA DOT

Service or Activity	Percent Outsourced
Highway Construction	100
Highway Design	75
Pavement Preservation Projects	100
Rest Area Maintenance	100
Urban Area Litter Pickup	100
Urban Area Landscaping	65
Overall Highway Maintenance Operations	65
Right-of-Way Property Management	100

With the purpose of obtaining broad information about current outsourcing practices nationwide, Part Two of the survey requested information on the following:

- The types of activities that are contracted out;
- When contracting was first initiated, by activity;
- What proportion of each activity is contracted;
- What the annual dollar volume is by activity;
- What types of contractors are employed;
- What procedures are used in contractor selection;
- What methods of payment are used for different activities; and
- What factors influence the decision to outsource a given activity.

Table 2 briefly summarizes the responses received. It lists eight broad groups of department functions, and shows how many states reported contracting out activities under these groups. The term "construction management" has been used to distinguish construction related activities from actual construction contracting. The next column in the table lists the number of different contracted services or tasks reported within each activity group. The last column names the activity most frequently contracted. For example, under Design, 27

TABLE 2

OUTSOURCING OVERVIEW

Activity Group	Number of States Outsourcing All or Part of Activity	Total Number of Outsourced Activities within Group	Activity Most Often Outsourced
Administration	14	11	Training
Planning	19	12	Research
Design	27	9	Plans and Specifications
Right-of-way	17	5	Appraisals
Construction Management	18	7	Construction Management
Operations	16	9	Pavement Markings
Maintenance	21	17	Roadway Surfaces
Other	20	12	Rest Areas

TABLE 3

INCEPTION OF OUTSOURCING, RESPONSES BY ACTIVITY GROUP

Activity Group	Decade of Initial Outsourcing, Number of Responses					
	Before 1950s	1950s	1960s	1970s	1980s	1990s
Administration	–	1	1	6	10	5
Planning	3	–	11	6	9	11
Design	3	8	12	15	15	10
Right-of-way	2	3	8	3	7	8
Construction Management	–	1	5	1	10	9
Operations	2	5	4	13	14	14
Maintenance	–	1	9	44	32	16
Other	1	1	3	4	15	10
Total	11	20	53	92	112	83

TABLE 4

PERCENTAGE OF WORK OUTSOURCED

Activity Group	Percentage of All Work Outsourced, Number of Responses					
	0–19	20–39	40–59	60–79	80–99	100
Administration	4	6	7	1	4	1
Planning	8	6	5	4	11	3
Design	29	11	9	8	10	1
Right-of-way	9	9	7	3	6	–
Construction Management	14	3	3	3	1	–
Operations	13	7	3	2	10	8
Maintenance	52	10	16	12	14	10
Other	6	4	–	2	6	15
Total	135	56	50	35	62	36

states (of 30 responding) reported outsourcing one or more activities; among the nine different design activities reported, outsourcing the preparation of Plans and Specifications was listed most often.

CHARACTERISTICS OF CONTRACTED ACTIVITIES

Tables 3 through 10 summarize selected characteristics of the information provided in the responses.

Initial Dates of Outsourcing

The periods when outsourcing began for different DOT functions is shown in Table 3, by activity group and decade. The figures represent the total number of activities reported in survey responses, not the number of states reporting them. For example, under Administration in the 1970s, the number 6 could represent one state contracting six activities or three states each contracting two activities. The table shows that Design services were reported to have been initially contracted in the 1940s or even earlier by some states. With succeeding decades, the number of activities contracted grew significantly. Maintenance contracting became important in the 1970s and is still being expanded, in both the number of states and the range of activities. In contrast, administrative services were generally not widely outsourced until the 1980s. Contracting of Operations, reflecting the growth of work in Intelligent Transportation Systems, has shown its greatest increase in the current decade.

The totals by decade reveal both the long history of outsourcing, and the steady growth by decade that is still continuing.

Degree of Outsourcing, By Activity

Table 4 shows the extent to which outsourcing was reported for the various activity groups. Again, the table represents the total number of different activities in the group reported in the responses. The figures thus indicate prevailing patterns for each group. For example, under Administration, where 23 instances of outsourcing were identified, only one activity was 100 percent outsourced, and four were outsourced in the range of 0 to19 percent.

The last column of the table indicates that only 36 (9 percent) of all the reported contracted activities are wholly outsourced. These are mostly in three areas: Maintenance, Operations, and Other. Under Maintenance, five responses reported wholly contracting out materials supply. Under Operations, the tasks of signal installation and intelligent transportation systems work were 100 percent outsourced, according to replies from six states. Under "Other," a wide variety of activities were totally contracted. In Florida, these ranged from

TABLE 5
CHARACTERISTICS OF REST AREA OUTSOURCING

Activity	Year Begun	Percent to Contract	Annual Volume	Contract With	Selection Process	Payment Basis	Decision Factors
Rest Areas—100% Contracted Out	Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
States Reporting							
Arizona	80s	100	$1.7 M	GC, SC	LB, NA	LS, UP, CP	PD, SC
Florida	60s	100	$20 M	C, GC	NA, LB	LS	SC, SS
Nevada	40s	100	$150 K	GC	LB	LS	SC
South Carolina	80s	100	3.2 M	SC	LB	LS	CC
Virginia	1995	100	UNK	SC	LB	LS	PD, SC, CC

NOTES FOR COLUMN HEADINGS—PART TWO

NOTE 1. The year of the decade (e.g., 70s) the activity was first contracted.
NOTE 2. The proportion of the activity that is contracted out, in the following groups: 0–19, 20–39, 40–59.
NOTE 3. The approximate annual dollar volume contracted for the activity (in million $).
NOTE 4. The type of contractor principally used for the activity: general contractor (GC), specialty contractor (SC), minority or disadvantaged contractor (MC), consultant (C), another state or local public agency (PA), nonprofit private organization (NO), volunteer group (V), other (O).
NOTE 5. Procedure used for selecting contractors: low bid (LB), negotiated agreement (NA), sole source (SS), other (O).
NOTE 6. Basis of payment principally used for the activity: unit price (UP), lump sum (LS), cost plus (CP), hourly rate (HR).
NOTE 7. Factors influencing decision to contract for the activity: legal requirement (LR), policy direction (PD), staff constraints (SC), cost comparisons (CC), specialty skills or equipment (SS), other (O). Please list as many as are appropriate.

"Process server" at $25,000 per year to "Building Design and Construction" at more than $23 million. Kansas identified six different activities that were 100 percent outsourced.

The degree of variation in outsourcing by activity was shown in a previous study of practices in snow and ice control.

> Twenty-six of the 34 responding state agencies indicated that they almost always use their own personnel and equipment for winter maintenance. Three agencies reported using contract services to meet approximately 10 percent of their needs. New York DOT contracts approximately 25 percent of its needs, Connecticut 28 percent, and Maryland 50 percent. (*8*, p.17).

What may be most significant about Table 4 is that much of the reported outsourcing, across all activities, represents less than half the total volume of work in the activity. More than one-third of the activities are contracted at less than 20 percent of the total work volume. This finding suggests that states retain staff for carrying out most work in-house and are contracting out peaks in workloads. More evidence of this appears in the next chapter.

Table 5 shows the varied practices of five states reportedly outsourcing all rest area work. The characteristics in terms of dollar volumes, contracting methods, and reasons for contracting, vary greatly among the responses.

Work Volume Contracted

Table 6 groups responses by activity area into various levels of dollar volumes, ranging from less than $100,000 per year to over $10 million. The results repeat the diversity shown in Table 4. Areas with contracted volumes over $10 million include: plans and specifications, other design, construction engineering and inspection or management, roadway surfaces, and other maintenance activities. At the other extreme, right-of-way shows the greatest number of activities with contract volumes under $500,000. Apart from the distinctions at the extremes, within each activity group, the volumes contracted are quite variable.

Types of Contractors

Table 7 shows the types of contractors selected for work, from general and specialty contractors to consultants and others (which includes public agencies, minority contractors, volunteer and nonprofit organizations). Many replies indicated two or more contractor types per activity. Specialty contractors predominated, particularly in the areas of Right-of-way, Operations, and Maintenance. General contractors were well represented in Operations and Maintenance, while consultants dominated the Design and Construction Management areas.

Across the entire range of activities, respondents identified minority contractors in only 22 instances. Public agencies (often state universities) were named in 34 cases and were well-distributed by type of activity. Nonprofit and volunteer organizations were reported as contractors in only three and two instances, respectively.

Method of Contractor Selection

Table 8 shows the basis for choosing contractors, again stratified by activity groups. More than one method was often cited for a given activity. The Arizona response, for example, cited low bid and negotiated agreement for each of the 34 contracted activities it listed. Rather than showing all the combinations reported, Table 8 simply records the number of entries for each contractor option.

The pattern generally follows that of Table 7 on contractor types. Where general or specialty contractors predominate, so does the low-bid method. Where consultants are most employed,

TABLE 6

DOLLAR AMOUNTS OUTSOURCED, RESPONSES BY ACTIVITY

Activity Group	Dollars ($) 0–99 (000's)	100–499 (000's)	500–999 (000's)	1–1.99 (million)	2–4.99 (million)	5–9.99 (million)	10 + (million)
Administration	3	12	3	4	1	–	–
Planning	2	13	9	7	6	2	–
Design	2	9	7	6	11	4	9
Right-of-way	8	7	7	4	4	1	–
Construction Management	1	4	3	1	2	2	6
Operations	2	3	5	9	18	6	4
Maintenance	3	16	25	11	20	13	24
Other	1	11	6	4	5	1	4
Total	22	75	65	46	67	29	48

TABLE 7

CONTRACTOR TYPES, RESPONSES BY ACTIVITY

Activity Group	General Contractor	Specialty Contractor	Consultant	Minority Contractor	Public Agency	Other
Administration	2	12	13	2	7	1
Planning	4	12	19	–	12	6
Design	10	9	59	4	1	1
Right-of-way	1	19	18	–	–	–
Construction Management	3	5	20	2	4	–
Operations	18	32	6	2	–	–
Maintenance	57	62	5	6	8	2
Other	9	15	9	6	2	4
Total	103	166	149	22	34	14

TABLE 8

CONTRACTOR SELECTION METHOD, RESPONSES BY ACTIVITY

Activity Group	Low Bid	Negotiated Agreement	Sole Source	Other
Administration	9	19	8	6
Planning	6	21	6	4
Design	10	70	3	7
Right-of-way	14	25	2	6
Construction Management	8	22	–	2
Operations	46	12	–	3
Maintenance	102	35	–	2
Other	15	17	4	4
Total	210	221	23	34

negotiated agreements are most used. Sole source selection was reported in less than 5 percent of the instances, primarily with Administration and Planning functions. In Table 7, these are areas for which "Other" contractor types were reported. No sole source contracting was reported in the areas of Construction, Operations, or Maintenance. In all, low bid and negotiated agreement methods accounted for 89 percent of the total.

Basis for Payment

Table 9 records the number of times that different payment methods were cited by respondents. Two or more methods are often used for the same activity area, and the overall pattern is similar to that of Tables 7 and 8. Unit price methods are associated with activities performed by general or specialty contractors, cost plus or lump sum methods with activities performed by consultants. The hourly rate basis for payments appeared throughout but was mostly associated with specialty skill activities. Not necessarily related to the dollar volumes contracted, the overall distribution of reported payment methods is as follows:

Payment Method	*Percent of all Activities Reported*
Unit Price	33
Lump Sum	28
Cost Plus	24
Hourly	14
Other	1

TABLE 9

CONTRACTOR PAYMENT METHOD, RESPONSES BY ACTIVITY

Activity Group	Unit Price	Lump Sum	Cost Plus	Hourly	Other
Administration	8	14	6	8	1
Planning	5	15	16	4	2
Design	10	36	52	13	2
Right–of–way	18	11	8	18	1
Construction Management	8	4	14	11	–
Operations	32	15	11	3	–
Maintenance	82	39	12	17	–
Other	11	13	7	8	2
Total	174	146	126	72	8

TABLE 10

FACTORS INFLUENCING CONTRACT DECISION, RESPONSES BY ACTIVITY

Activity Group	Legal Requirements	Policy Directive	Staff Constraints	Cost Comparison	Specialized Skill	Other
Administration	5	13	23	7	19	1
Planning	–	9	30	5	22	1
Design	2	25	70	6	31	–
Right–of–way	3	13	33	3	13	–
Construction Management	–	10	27	2	7	–
Operations	1	20	32	3	19	3
Maintenance	4	57	56	30	52	1
Other	11	12	21	4	12	3
Total	26	159	292	60	175	14
(% of total)	(4)	(22)	(40)	(8)	(24)	(2)

FACTORS INFLUENCING THE DECISION TO OUTSOURCE

For each Part Two activity, respondents were asked to relate the factors that influenced the decision to outsource. The following choices were suggested in the survey form: legal requirement, policy direction, staff constraints, specialty skills or equipment, cost comparisons, and other.

In many cases, three or more factors were listed for some activities. Results are entered in Table 10 by the reported frequency of individual factors, rather than recording all the combinations cited. Cases with three or more factors were named 84 times; most included specialty skills and staff constraints with one or more other factors. Of the 140 entries listing two factors, almost two-thirds named staff constraints and specialty skills, and the remaining third named policy direction and staff constraints.

Table 10 shows the results by the activity areas. Legal requirements were named only 26 times in all (less than 4 percent), with nearly half of those in the activity category of "Other." Policy direction was listed 159 times, accounting for 22 percent of the total. Specialty skills was named as a contributing factor in 175 instances, or 24 percent of the total; rarely named by itself, it was usually associated with staff constraints. Staff constraints was named most often, 292 times or 40 percent of the total. Cost comparisons were cited 60 times in all, accounting for 8 percent of the entries.

When the activities are grouped under the eight major headings, certain characteristics emerge. For example, in the Maintenance area, policy direction weighs as heavily as staff constraints and specialty skills. In other areas it is less significant. Staff constraints were the dominant factors in planning, design, right-of-way, and construction. And while cost comparisons were rarely cited in most activity areas, they were named 30 times in the Maintenance area.

The Part Two survey replies make clear that privatization is not new to state departments of transportation. Apart from their historic role of outsourcing construction programs, states now outsource work in all functional areas. Some were contracting selected Design and Operations functions as long ago as the 1950s or even earlier. Since then, the trend has broadened to include many more states and a broader range activities.

At the same time, the responding states indicated that much of the work in most areas is still carried out in-house by department staff. Only a few specialty items appear to be wholly outsourced, usually in the areas of Operations and Maintenance. Overall, practice varies between the states in activities outsourced and in what percentages, and other attributes. The diversity clearly reflects the diversity in other state characteristics such as the varying responsibilities of transportation agencies and state laws, as well as cultural, demographic, and geographic factors.

Legal requirements were rarely cited as influencing the decision to outsource. The most frequently mentioned factor was staff constraints, followed by the need to obtain specialty skills and equipment. Cost comparisons as a factor in choosing to outsource were most often cited in connection with maintenance activities.

CHAPTER THREE

MAKING THE DECISION TO OUTSOURCE

This chapter deals with the decision-making processes that may lead to the outsourcing of highway services and facilities. Selected survey findings on factors that influence such decisions were shown in the previous chapter. This chapter begins with a broad view regarding outsourcing and moves toward the processes that can be used to determine how much of a particular activity should be outsourced.

INFLUENCES ON OUTSOURCING CHOICES

In the private sector, arguments have been made that all activities not contributing to an organization's "core competency" should be outsourced. The tradeoffs between outsourcing activities and performing the same work in-house have been identified in terms such as those shown in Table 11. While the context is the private sector (where trade secrets, for example, are important considerations) the listed advantages for outsourcing are also relevant to the public sector.

TABLE 11

COMPARATIVE ADVANTAGES OF OUTSOURCING VERSUS WORK DONE IN-HOUSE (Adapted from *9*, p. 178)

Outsourcing Advantages	In-House Advantages
Economies of scale	Economies of intimacy, integration, and scope
Lower fixed costs	Internal unit profits
Outside knowledge brought in	Trade secrets kept inside
Easy-to-shed capacity	Loyal and flexible competence developed
Focus on core competencies	Capacity for growing new competencies

In the public sector, a list of 12 factors to be considered that could affect decisions on transportation outsourcing has been suggested (*10*):

- Limited in-house resources,
- Need for specialized expertise or equipment,
- To compare cost-effectiveness,
- Better quality,
- Public demand for new services,
- Statutory requirements,
- Agency policies,
- Seasonality of work,
- Contractor availability,
- Industry pressures,
- Employee/Union concerns, and
- Emergencies.

Considerations in these areas vary from one situation to another, and from one state to another, but such a checklist may be a useful starting point. Examples of how policy and emergency conditions, particularly, may be involved are described below.

Policy Direction

A push toward outsourcing has come in recent years from national and state political decisions relating to the downsizing of public agencies of all kinds. In the 1980s, in an article that noted Congressional Budget Office findings of economies that could be achieved by outsourcing, one member of California's Transportation Commission advocated outsourcing of highway design functions. By the 1990s, the political climate in California had led to the publication of "California Competes," a workbook described as "a guide for department managers to help them in their efforts to modernize and refresh the state's approach to service delivery. Thus, it focuses on the key elements required for effective, competitive management by department managers, whether the particular department activities are best retained, improved, outsourced or transferred" (*7*, p.iii).

Arizona has a similar handbook with an appendix entitled "Competitive Government Opportunities" (*11*). Under "Transportation," 22 activities or "Target Functions" that have potential for outsourcing are listed.

Emergencies

Special situations may heavily influence a decision to contract out transportation activities. Natural catastrophes such as floods and earthquakes may require immediate mobilization of resources. The rapid reconstruction of Southern California freeways after the Northridge earthquake, for example, was attributed to the implementation of emergency powers by the Governor's office and suspension of the normal contracting procedures.

SURVEY RESPONSES

Part One of the survey form asked whether some activities are outsourced because of legal or policy requirements. Responses revealed the diversity in practice among the states. For example, California noted that some activities may be outsourced, but that none are required to be. Minnesota, however, reported that some legislative studies and expert witness cases must be outsourced. At the same time, though, legislation has

put a cap on hiring consultants and restricts the DOT from contracting out any work that can be performed by in-house staff. Minnesota and several other states noted legal requirements for outsourcing all construction.

Other replies were mixed; nine states unequivocally said that outsourcing was a legal or policy requirement; 14 states said unequivocally the opposite; and others that such requirements existed only in very limited special cases. One comment from Maryland, while citing no specific examples, noted "Policy to privatize is a reality."

A second question in the survey asked: What other considerations either force or encourage a decision to outsource? Eighty-one responses from 34 states provided information. The issue of workload, described in various terms such as staff constraints or scheduling, appeared most often. Under this heading, inability to maintain or increase staff in the face of growing workloads was frequently mentioned, with the time or schedule factor being named in 21 replies.

Named next most often was the need for specialized skills or equipment. The issues of cost or cost-effectiveness appeared in only 14 responses. Factors such as quality, need for a neutral third party, and political or other pressures from unions or industry, were named even less frequently. Comments in the survey responses reflected the pattern evident in Table 10 of the preceding chapter. Apart from legal or policy requirements, workload and specialty needs dominated the issue of whether or not to contract out.

ASSESSING OUTSOURCING FEASIBILITY

The survey elicited information on procedures for determining whether and what to outsource. One question asked: What cost comparison procedures are used in the decision process and what items are typically included? A second question asked: Are other standard procedures used to determine whether to contract out an an activity? Sixty-eight responses from 33 states addressed the first question. Fifty-nine responses from 32 states addressed the second. Sometimes, multiple responses from a state gave conflicting information. One division within a department might report having no procedures while others reported procedures of varying formality.

Cost and Cost-Effectiveness

With regard to cost comparisons, 11 states reported that none were made. Within this group, several commented to the effect that the decision to outsource work was not "cost-driven," but was due to staff constraints or specialty needs. Replies from seven states reported that thorough cost analyses of in-house versus contract costs were made in the decision process. A Pennsylvania reply provided the standard form used in Maintenance projects for directly assessing Departmental versus contract costs. Remaining replies indicated varying degrees of analysis or gave answers that were not fully responsive to the cost comparison issue.

Other Procedures

A question about other standard procedures drew a similar spread in answers. Respondents from 17 states said no standard procedures were employed. Others reported various analytical approaches. For example, a Minnesota reply stated, "For engineering services a workload volume-to-manpower capacity ratio is developed. When workload exceeds capacity, work is outsourced to meet delivery criteria." Others mentioned using a case-by-case approach. An Iowa response said, "We like to keep some of the consultants informed about our procedures and changes by using them fairly regularly even if it's on small projects."

The Virginia response indicated awareness of private sector philosophies on outsourcing in these terms:

> Work activities that appear to be outside the Department's core business. For example: the Department is conducting a two-year pilot program for privatized warehousing services. The firm selected for providing the services will provide an on-site turnkey repair parts operation, as well as procure, deliver, and warehouse all stores stock inventory required by the functional divisions involved in the pilot program.

Arizona's reply provided two relevant documents. One described a process for reviewing activities that might be considered for privatization (*11*). An overview of the process is summarized in Figure 1. In selecting a Target Function, the procedure suggests that it should have one or more of the following attributes:

- Not central to the agency mission
- Not proven to be cost-effective
- Private sector provider interest
- High levels of customer dissatisfaction
- Successfully completed by other government entities.

The second document, reproduced in part in Appendix C, suggests a cost analysis procedure to be employed in subsequent examination of Target Functions.

A more broadly based review procedure was given in material provided with the California response. Figure 2 shows a decision tree for evaluating whether an activity should be retained in-house, transferred to another public agency, or outsourced. An eight-step process with worksheets was developed to facilitate analyses. A section on cost measurement (see Appendix D) (*7*, p.22–23) suggests the cost elements to be considered for both in-house and contracted services.

Excerpts from the Pennsylvania Department of Transportation's Maintenance Contractability Manual are given in Appendix E. This document provides an objective method for evaluating whether selected maintenance activities could be more effectively performed by Department forces or by contractors. Weighing eight different factors leads to a "Contractability Rating" that is then used to assist in the "make/buy" decision-making process.

In summary, the survey responses reveal that the procedures used by the states for determining whether to contract

COMPETITIVE GOVERNMENT PROCESS OVERVIEW

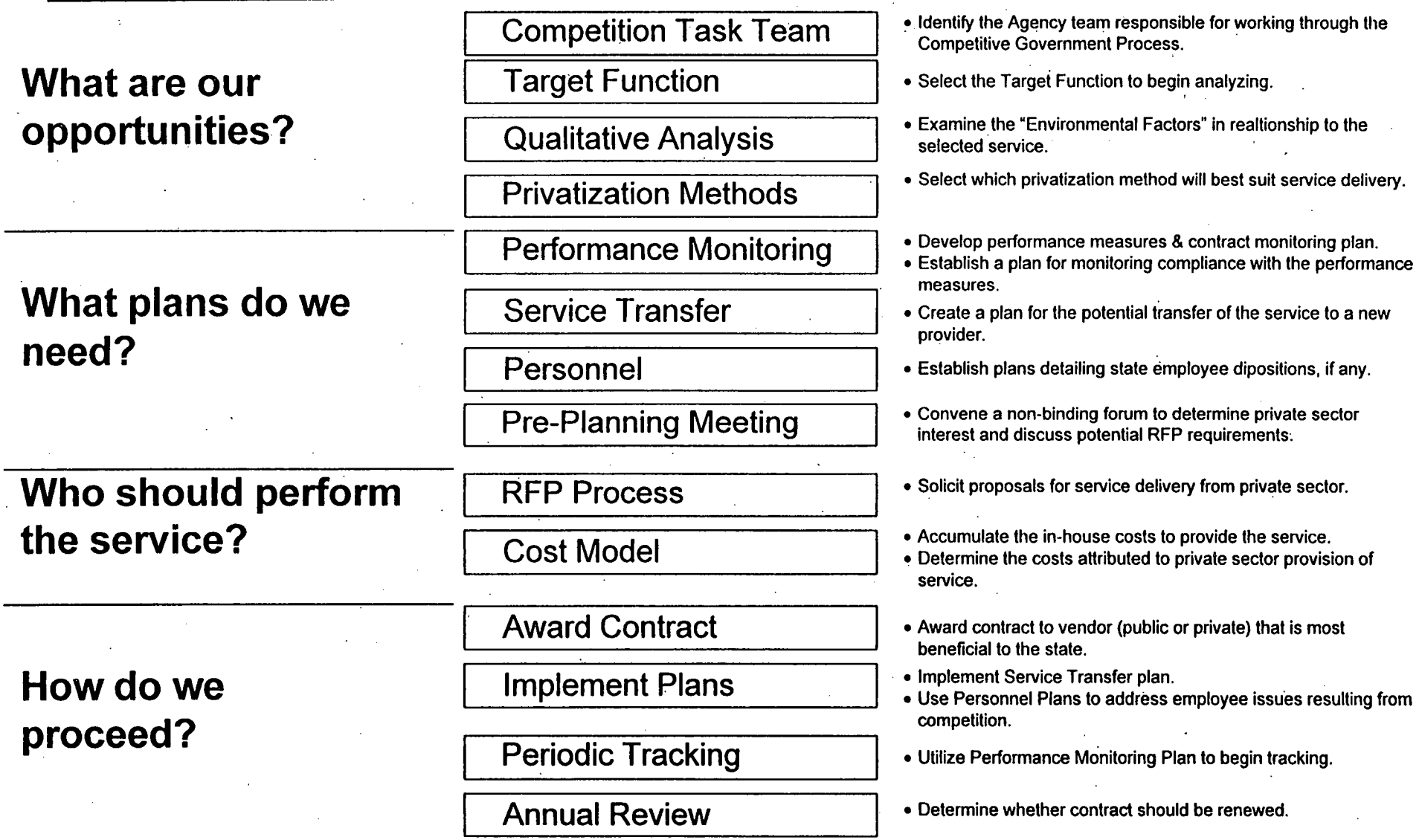

FIGURE 1 Arizona's process for assessing feasibility of outsourcing *(11)*.

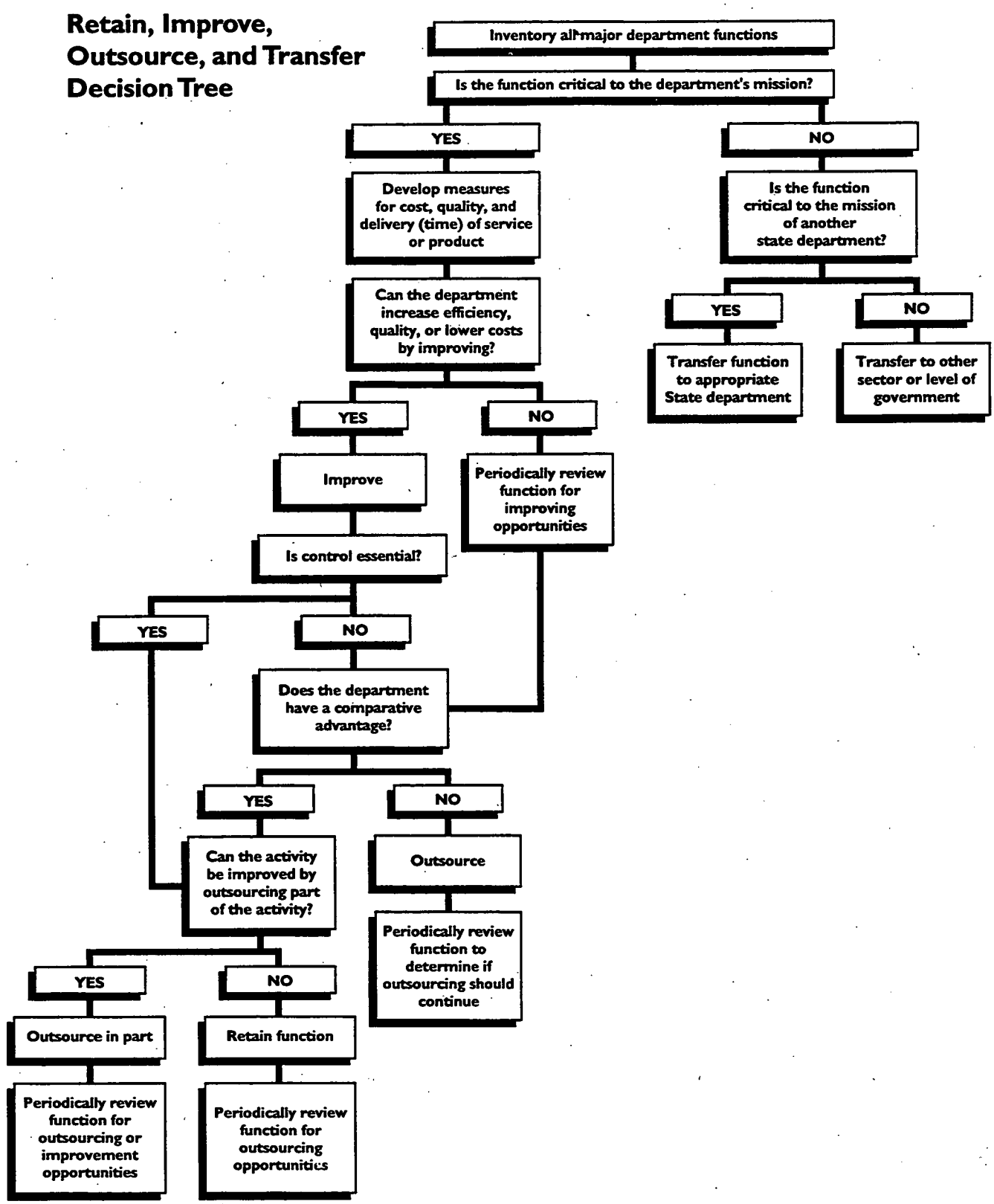

FIGURE 2 California decision tree *(12)*.

out activities vary greatly. They evidently range from no procedures at all to others of significant formality and complexity.

IMPEDIMENTS TO OUTSOURCING

A number of considerations or situations can negatively affect decisions about outsourcing transportation activities. Generally, the literature provided scant information on factors that work against a decision to contract. However, the survey responses to the question on this issue were informative. Seventy-five replies from 32 states contributed details.

The availability of in-house staff, or the lack of available contractor forces, was the most frequently mentioned deterrent to outsourcing activities, according to replies from 15 states. Replies from 14 states stated that the time involved in getting to contract was also a discouraging factor. Its significance may be underscored by the fact that California has been reportedly attempting to obtain legislation that will shorten the period (sometimes as long as one year) from the initial Request for Proposals to contract award dates (*12*, p.32).

The next most frequently mentioned item, according to replies from 13 states, was cost. In most cases, this appeared to be recognition of the fact that outsourcing would be more costly than in-house performance of the same activity. Findings of this nature were reported in a 1994 review prepared for the organization "Professional Engineers in California Government" (*13*).

Many replies noted concerns about loss of qualified professional staff, union considerations, and other employee issues. The issue of retaining qualified staff was raised as follows in a Minnesota reply. ". . . the agency must retain employees where expertise is built up and education of contractors regarding specific procedures and technical requirements for each successful bid would become impractical." Related legislation affecting decisions to outsource was noted earlier in an excerpt from Minnesota survey responses. California and Washington have also experienced similar legislative or legal constraints because of court interpretations of the state constitution articles relating to civil service systems.

The costs of administering and monitoring contracts was mentioned as an obstacle in replies from four states. Histories of bad contractor performance or poor work quality was also identified as a factor. Loss of emergency response capability in-house was another issue raised. A North Carolina reply noted, for example, that when calling upon previously contracted-for motor graders to meet highway snow removal needs, the DOT may find that they have been diverted by contractors to more rewarding tasks at airports and commercial parking lots.

A different class of impediments to outsourcing was described in an early study of highway maintenance contracting (*14*). It was reported there that bonding requirements, payment procedures, and tort liability questions were often inhibitive for contractors, especially small ones, bidding on highway maintenance work.

The broad range of factors that can work against a decision to outsource work may best be illustrated by the response below, excerpted from Virginia's survey reply.

Work is normally performed in-house if:

- Outsourcing would not be in the interests of "best business" practices.
- A reconstruction project requires extensive knowledge of system or area.
- An emergency repair or permanent restoration project.
- Available manpower and workload can accommodate the work.

Other considerations may include:

- Services close to fundamental government purposes.
- Services essential to government's ability to protect the citizens' health, safety and welfare.
- Services requiring special skills or equipment that are not readily available in the private sector.

DETERMINING HOW MUCH TO OUTSOURCE

When the issue is one of needing special skills or equipment to accomplish a task, there is no question about what proportion of a task should be contracted out. Similarly, where a combination of workload, staff size, and delivery schedules creates a "crunch" situation, there is little question about the amounts of work to be performed in-house and those to be outsourced. Such considerations presumably explain why, earlier in Table 4, some tasks are 100 percent outsourced while others show highly variable ranges between states in the proportions being contracted. These considerations probably also explain the apparent lack of formal procedures in many agencies to determine outsourcing levels.

A recent survey of contract research programs showed high variability among research areas in the percentages of work contracted versus that performed by department staff. "Of the 13 categories in which research projects were started, only the pavement category had more than 50 percent of the projects conducted by agency research staff. From 64 to 94 percent of the research of all the other categories was done by contract."(*17*, p.10).

Where the choices may be driven by cost considerations, the Arizona and California procedures are especially pertinent. While a research study of highway maintenance contracting (*15*) reported cost analysis models used by several states during the 1980s, little detailed information was received in the current survey. Florida DOT provided a recent report on maintenance contracting, in which a "Maintenance Contracting Decision Support Model" was developed (*18*). This study resulted in a 4-year plan to reduce in-house maintenance staff by more than 400 positions.

In summary, based on the survey responses, the question of how much of an activity should be performed in-house and how much should be contracted out is subject to both positive and negative influences. The degree of outsourcing is not typically resolved by standard formulas or models.

TRENDS IN OUTSOURCING

The 1990s have seen growing and well-publicized emphasis in the private sector on downsizing and outsourcing as techniques for achieving greater efficiency. In the public sector, outsourcing has seen increasing acceptance as well.

Within state DOTs, the situation is still somewhat mixed, according to 75 replies from 31 different states in the present survey. A majority of respondents (from 20 states) said that legislation or policies mandate a greater amount of outsourcing in the future. Those from six other states said that was not the case, while in the five remaining states, some respondents said "Yes" while others said "No." Appendix F shows the entire range of answers received to the question on trends.

One measure of the changes taking place was revealed in the recent survey of contract research programs. "All but one reporting state [Kentucky] has a contract research program. As a percentage of the entire program, the states' contract programs have increased from 50 percent in 1987 to 70 percent in 1994, reflecting the states' staff limitations of number or of expertise" (*17*, p.36).

CHAPTER FOUR

PROCURING SERVICES BY OUTSOURCING

This chapter describes the procedures followed in obtaining contracted services, from preaward activities to those in contract management. Its contents are based almost wholly on replies to two sections of the Part One survey, the first on preaward and the second on postaward procedures. The respondents described procedures used for traditionally outsourced activities such as construction and design, as well as for activities more recently outsourced. As the traditional and nontraditional activities could not be readily separated, the combined results tend to portray procedures that generally have been long established.

The earliest published references found related to these specific issues dealt with highway maintenance contracting (*14,15,16*). An AASHTO guide on preconstruction contracting, published in 1996 (*19*), serves as a reference to meet agency needs in developing consultant programs, organizing and training staff, consultant selection, contract development and program management.

PREAWARD ACTIVITIES

Several states (Arizona, Colorado, Hawaii, Maine, Nevada, and South Carolina) sent copies or excerpts of their procedural manuals for obtaining consultant services. As in some cases these extend from 30 to 50 pages, no attempt has been made to extract or summarize these materials. What follows is principally an overview of the comments on practices offered in the survey responses.

Preparing to Outsource

The first question in the survey's preaward section asked about methods by which contract services were obtained. The three primary methods of low-bid, negotiated fee, and sole source were identified 56, 56, and 38 times, respectively. As Table 8 showed, low-bid procedures were mainly associated with Operations and Maintenance, negotiated agreements with Design, and sole source with Administrative and Planning activities.

About 20 responses in this section gave additional details or other methods. These included municipal agreements, requests for proposals that consider both qualifications and price, "qualifications" (without amplification), and so on. These more unusual arrangements, Table 8 showed, were broadly distributed across the range of department functions. In one case, South Carolina enclosed an excerpt from a Request for Proposal soliciting design concepts on the Sea Island Expressway, a possible public-private partnership project.

Location of Preaward Management within Departments

Asked whether preaward procedures were handled centrally or within functional units, 30 replies indicated central management, 24 said functional unit, while replies from 13 states said both. Where the activity takes place depends on several factors. For example, nine responses stated that legal requirements or DOT policy dictated the location. Project cost was a factor cited several times; it was occasionally related to legal requirements. For example, projects costing less than $25,000 or $50,000 may be handled by functional units while larger ones are managed centrally. Another group of replies stated that the degree or need for functional unit involvement could determine the location. Last, six described preaward procedures as involving both functional units and central management.

An indication of the mix is given below by the responses from Minnesota, New York, and North Carolina.

Minnesota

- Mn/DOT engineering/technical consultant acquisition is handled centrally for budgetary control and uniformity to meet state and federal requirements for contracts. Some larger functional units have created specialists for contracting, so they do their own.
- Both are used. The functional area assists the central management, especially in the technical aspects/requirements desired and knowledge of vendors or sources of expertise needed.
- Office of Bridge Design selects contractor and negotiates fee. Central Management processes the contract.
- Need for services and if it is central or decentralized.

New York

- Central Management takes care of contract preparation and also processes all subsequent payments.
- Preaward activities in the Department are diversified. Depending on the project, in-house design can be performed in the Regional offices, the Main office, or a combination of both. Project complexity and size, staffing workloads, and geographic location are some of the factors which determine where the design is performed.
- Policy.
- It is a Main office function to contract for most equipment, materials and services. Minor contracting is done at the Region or Residency level.

North Carolina

- The people with the expertise in the activity to be contracted are in the functional unit.
- Span of control and responsibilities for the specific function.
- Functional units determine quantities and special requirements and hold prebid conferences. Central Management prepares proposals, handles advertisement, and opens bids.
- N.C. Administrative Code & Purchasing Manual requires participation by functional unit.

The results above suggest how administrative procedures evolve according to varied legal and policy considerations that differ from state to state.

Prequalification of Contractors

To the question about contractor prequalification, there were 40 replies that prequalification was required, 20 that said "No," and replies from 8 states that said "Yes and No," depending on the activity. More detail was provided in answer to the question about activities not requiring prequalification. While replies from six states said that prequalification was required for professional services, replies from nine states said that it was not. Replies from three states said that construction contractors were prequalified, while those from four other states said they were not.

Risk-sharing and Liability Issues

State laws and departmental regulations usually stipulate contractor responsibilities with regard to performance and liability issues. In many cases, standard documents (i.e., the contracts, specifications, or special provisions) contain a "Hold harmless" clause protecting the state. Consultants must often provide "errors and omissions" insurance as well as liability insurance. Other contractors must post bid and performance bonds and also provide liability coverage. Warranties are also sometimes employed.

Most survey responses, 76 from 33 states, did not provide details on these matters. One unique response was: "ADOT has successfully employed the "Partnering Concept" to solve all but the extremely complex/costly issues." Chapter 6 describes the partnering concept further.

Alternative Bids or Value Engineering

A question on the use of alternative bids or value engineering in contracted services drew 43 replies from 30 states. Six states said or implied that neither value engineering nor alternative bids were permitted, while those from three additional states reported that alternative bid procedures were not allowed. Four replies specifically said that alternatives were acceptable, some noting that the option was only available if mentioned in the request for proposals.

According to survey responses, value engineering proposals are acceptable in 19 states. Several replies provided copies of specifications or other documents detailing how such proposals are implemented.

Incentives and Disincentives

A recent survey of maintenance contracting revealed that "One third of the agencies include performance incentives or disincentives in their contracts. Most are disincentives." (*15*, p.19). The present survey results suggest that the picture may not have changed. From the 64 responses, representing 32 states, it was not always clear whether comments applied to all contracting or only to construction. Replies from 18 states said that liquidated damages were assessed, or that varied penalties or removal from prequalification lists might apply. New Jersey provided a copy of its current damages schedule, graduated per-day costs based on contract amounts.

Replies from three states said that incentives or disincentives were not employed, while those from seven states said that incentives or disincentives were not applicable in professional service or consultant contracts. Replies from eight states reported their use. A comment from Georgia stated "Partnering has begun in construction contracts with incentives for early closure of work." The application of incentives and disincentives is described in the postaward section that follows.

The procedure called "A+B Bidding" was reported in returns from Maryland, New York, North Carolina, and South Carolina. It requires bidders to submit proposals not only including project costs but also estimates of time for completion. The agency selection of a contractor is then based on two elements, as project time is assigned a cost value relating to the delays and disruption ensuing to the public. The method has been used in recent years by up to 23 states, but in relatively few applications (*20*, p.38).

The 1996 AASHTO guide relating to consultant contracting (*19*) provides an appendix containing sample contract provisions covering many of the issues above.

POSTAWARD ACTIVITIES

Six questions in Part One of the survey related to postaward contract management. The responses are summarized next.

Location of Contract Management

The question of whether contract management responsibility was housed within the DOT in different locations according to contract types brought a wide range of replies. Those from eight states explicitly said it did not. Those from six states said it did. Those from 15 states (with multiple responses reflecting different functional areas) said the responsibilities fell in some cases to central management, in others to

the functional unit, and in still others to both. For example, the Arizona reply stated: "Procurement Services administers all bidding except construction projects. They are administered by ADOT Contracts and Specifications Office, Construction Section and appropriate district."

Connecticut practices were varied by activity. Value-in-Place (VIP) contracts, which procure services to be provided on an on-call basis, are administered by Central Management. Architect/Engineering (A/E) services are typically administered by the functional unit with support from Central Management. Another Connecticut respondent noted that functional units are responsible for change orders, extra work, and claims by or against contractors.

One Minnesota reply reported that "Mn/DOT uses a two-tiered contract management process. The central contracting group is responsible for administrative items, the Mn/DOT project manager is responsible for technical elements and financial increases are initiated by the project manager."

Virginia described its practice, and the policy that drives it, as follows:

> Contract changes are the responsibility of the contracting source. Contract management is usually the responsibility of functional divisions. Central office may become involved on claim evaluations, payments, and change orders that will require additional expenditures above $200K. "Sound project management," including best business practices, appropriate VDOT resources to accomplish VDOT's programs, and stressing that all work, materials, and equipment will be of the highest quality, is emphasized throughout VDOT's *Strategic Plan for the 21st Century*.

Replies from Washington state described a distinction based on contract amounts and project complexity. West Virginia reported that construction is managed by districts, while other services are provided by the responsible headquarters office.

In sum, contract management responsibilities are assigned to various locations by various criteria. Some states make a local district/central split, some have a central management/functional unit split, some assign responsibility by size of contracts, and others make a split based on administrative and technical roles.

Contract Monitoring

A review of practice in contracting out government services, not exclusively transportation functions, makes the following statement about the importance of monitoring:

> Public sector decisionmakers have yet to learn from the private sector the significance of managing outsourcing. Efficient monitoring, though costly, pays for itself by preventing overcharges and poor quality in the first place, by recouping inappropriate outlays, and by disallowing payment for inadequate performance (*21*).

The present survey findings suggest that state transportation agencies fully recognize the importance of monitoring. Contract monitoring is virtually always a responsibility of the functional unit for whom the work is being done. This was reported in 76 replies from 32 states. Five states specifically indicated that project managers were assigned. A California response described their role in these terms:

> Contract managers are responsible for monitoring contract performance, approving deliverables, monitoring progress, resolving problems, approving payments, etc. Caltrans has written policies and provides training for contract managers.

Other units may play a supporting role, as an Idaho response said, "Front line monitoring by functional unit, secondary by central management." A Michigan reply stated, "Quality assurance is handled by division's project manager and contract monitoring is through Division's contract administrator." Two states with wide-ranging responsibilities for all highway systems reported that several layers of DOT management could be involved in Quality Assurance programs, such as county or residency, district and central offices.

Samples of evaluation forms for various activities were provided with some replies. The Colorado reply included a four-page "Procedural Directive" for contract monitoring, and Arizona's enclosure of its 1996 "Consultant Construction Manager Manual" included a three-page description of the project monitor role (see Appendix G).

While little specific information was obtained on Quality Assurance in this survey, information relating to highway maintenance programs is extensively reviewed in the appendixes of "Highway Maintenance Quality Assurance—Interim Report," NCHRP research project 14-12 (*22*).

Implementation of Penalty Procedures

Procedures for dealing with inadequate contractor performance, as reported by 75 replies from 31 states, are variable but show some common patterns for implementing the disincentives described earlier. For construction contractors, there are liquidated damages and bond forfeitures, the applicability of which are usually described in contract documents. Details for these are sometimes spelled out by statute, or they may be part of state agency regulations. According to survey returns, action is most frequently initiated by the functional units involved with the work, sometimes with assistance from a central management office.

One reply from Minnesota filled in the detail on such a process:

> A formal meeting is held by the functional group project manager with the contractor. The complaints are presented to the contractor. Failure to fix the complaints will result in a recommendation to the central management that the contractor be removed from the vendor pool. In most cases, the functional units address issues of delays, performance, etc. Where contracts go bad and technical requirements in the contract are not met, liabilities ensue, damages occur, or payments are not received, the process is formalized to the point of legal action.

A disputes review panel may be part of the process prior to recourse to mediation or legal action.

Where liquidated damages or other cost penalties may not apply, as in most consultant contracts, penalties range from project termination to removal from prequalification or bid lists. Such actions may be recommended and acted on by the functional unit, or recommendations may be forwarded to central management for action. Except for a handful of replies, the functional units were regarded as the primary implementers with regard to performance penalties.

Completion and Acceptance Procedures

Replies from 19 states said that contract completion and acceptance processing is a responsibility of the functional units, including District offices. In the case of 11 other states, replies indicated a joint involvement of central management and the functional unit. The joint roles sometimes meant that central management devises the procedures for local Districts or functional units to implement and also serves as a check to ensure that policy is carried out. In other cases, local or functional units sign off on technical acceptance while central management processes the administrative completion actions. Last, central management may serve as a backup to the functional units when problems emerge. This role was noted by Minnesota in the following terms: "The functional units and the contract administrator are initially involved. If a problem continues, the central Consultant Services Unit is employed. The third level is the Dispute Resolution board and finally the legal process/system is used."

Warranties

Only four survey replies commented on guarantees and warranties. A Minnesota reply stated that the DOT does not ask for warranties and guarantees on engineering contracts. The functional unit retains warranties and guarantees when provided. A North Carolina reply said that warranties and guarantees after contract completion are the responsibility of the user organization. DOTs in Pennsylvania and West Virginia commented that they do not use warranties or guarantees.

The following comments regarding warranties are found in a recent NCHRP synthesis:

> Based on the data collected it appears that less than half of the state departments of transportation are using warranties for their highway construction projects. Those that do are primarily using them for premanufactured products on projects and not for actual road construction items (*23*).

One reason that warranties are not more common may be that legislation and Federal Highway Administration policy has limited the types of federally supported work on which warranties may be required.

Evaluation of Contractor Performance

In answer to the question "Are procedures for contractor performance evaluation formalized?" replies from seven states said "No," those from 16 states said "Yes," while replies from 10 others with multiple responses were mixed. Because a single reply from a state may represent experience in only one division rather than that of the entire DOT, it is not possible to weigh the significance of such numbers. In some cases, it was apparent that while formal procedures might be employed in the Design division, for example, they were not in another, such as Construction. Several replies stated that procedures were being developed, mostly for construction contractor evaluation.

Replies from 21 states included copies of their contractor or consultant evaluation forms. These included 12 forms for construction contractor reviews and 18 for consultants or others. In 10 cases these were single-page documents, but most were longer. Arizona provided a four-page packet for construction contractors, and one of 15 pages for consultants. Florida provided a 17-page document for construction contractor evaluation, and a 14-page guide for consultant evaluation to which were attached unique rating forms for 24 different activities.

The form layouts were typically checklists of 4 to 20 or more items, to be weighted and graded on numerical scales. Some forms graded contractor performance in a range from poor to excellent. Some provided space for extensive comments by project managers, and some for a response by the contractor. Most provided for sign-off not only by the project manager but also by a Division head or other higher management level.

Use of Contractor Evaluations

Fifty-six replies from 30 states showed how contractor evaluations are subsequently used. Those from 11 states said in a general way that they were used in contractor prequalification or in selection committee processes. A California reply noted that all departments are required to contact the State Department of General Services during the selection process to determine if prospective contractors have had any previous negative evaluation. Kansas reported that three different evaluation forms used there had varying applications: one was for contractor prequalification, a second for inspector certification renewals, and a third for consultant selection committee use.

Florida and Virginia provided copies of their complete prequalification procedures. Both states have complex formulas for incorporating evaluations into the prequalifying process for general contractors.

CHAPTER FIVE

EVALUATION OF OUTSOURCED ACTIVITIES

The previous chapter offered information on the evaluation procedures applicable to specific projects done by contractors, this chapter addresses the measures of effectiveness for outsourcing programs in general. It thus reflects a mix of views relating to both traditional and newer activities being contracted. The chapter characterizes the benefits and drawbacks to contracting and describes, where found, the procedures used to evaluate contracting programs.

According to 70 replies from 31 states, outsourcing is beneficial. Fifty-eight replies gave an unqualified "Yes" to the question: Is the Department satisfied with the results of contracting out? Only 12 replies gave either a qualified affirmative answer or cited occasional failures. For example, one reply stated "Yes. However the cost of poor performance is high." Another comment expressed "concern that some design and construction work does not meet desired quality levels. Contracted research studies have been somewhat better."

COST-EFFECTIVENESS AND OTHER ANALYSES OF OUTSOURCING

A previous survey of maintenance contracting reported that 16 out of 27 states had found contracting to be cost-effective as opposed to four that did not (*14*, p.15). However, the study did not offer evidence of the analyses that might have been made to support those conclusions.

Thus, the present survey asked specifically whether cost-effectiveness or other analyses were done to compare the success of outsourcing with in-house performance of the same tasks. Out of 63 replies from 31 states, those from 17 states said such studies had been done, while those from 14 states said they had not. Yet only five states replied that materials on the studies could be provided. Others either declined to elaborate or replied in terms like: "Confidential," "Results inconclusive," "Not available at this time." A Louisiana response noted that studies were done "Minimally; however, this is not a full component of decision process to contract out." A Minnesota comment, where studies were not mentioned, said: ". . . recent State legislation requires such analysis on projects contracted after July 1, 1996." Several replies indicated that study procedures were under development or refinement.

Two states, New Jersey and North Carolina, provided copies of pertinent studies. The New Jersey DOT Bureau of Materials Engineering and Testing made a comprehensive comparative analysis of costs in performing various materials tests by private contractors and by the Bureau staff. Results showed that in-house costs were lower (*24*), and explain why the Bureau is now providing materials tests for the New Jersey Turnpike. The North Carolina study compared building renovation cost estimates made by in-house staff and by a contractor. In-house cost was estimated at $181,000 with a 4-month schedule, compared to a contractor estimate of $236,000 and a 9-month duration between the decision to proceed and project completion.

BENEFITS OF OUTSOURCING

The survey asked about benefits to three groups from outsourcing highway services: to the DOT, to contractors, and to the general public. The results are summarized below for each group.

Benefits to the Department

Replies from 30 states described outsourcing benefits in many different terms; these could be grouped by five benefit types: 1) Issues of supplementing staff work forces, increasing work volumes, or freeing up staff for other activities; 2). Flattening out peak workloads or seasonal demands, and enhancing staff flexibility; 3). Maintaining schedules or expediting work programs. (Seventy-five replies identified improved ability to meet program workloads and schedules as a benefit of contracting out.); 4). Obtaining specialized skills or equipment not available with in-house capabilities; 5). Cost savings were mentioned in 14 replies from nine states.

An advantage of improved performance or quality of work from outsourcing was named only three times. Other benefits cited were: reduced liability, obtaining neutral third-party views, public relations, and the value of training consultants in state procedures.

It appears that, far above considerations of cost, skills, or work quality, the benefits of contracting most recognized by department personnel are those of being able to supplement in-house staff in order to meet the workload and schedules of DOT programs. This pattern mirrors the findings shown earlier by Table 10.

Benefits to Contracting Industry

The obvious benefits to the contracting industry are added sources of work and increased profit potential. Three other benefits received frequent mention: job creation and employment, enhancing local economies, and opportunity to develop or broaden skills. A scattering of other benefits were listed, including: using expertise, stabilized workloads, increased competition, and improved working relations with contractors.

Benefits to the General Public

Sixty-one replies from 30 states identified benefits to the general public from outsourcing. The benefit named most often was timely meeting of schedules. Related to that was efficient production. Thirteen replies from 11 states mentioned cost savings. Next most frequently mentioned was "efficient use of state employees" or "smaller work force."

Other benefits to the public, named in replies from five states each, were:

- Putting dollars back into the community,
- Job creation, and
- Better, safer highway systems.

Other benefits named were: more competition and competitive prices, high quality products, better public perception of government, and implementation of privatization. A hint of an unusual policy came from Oregon: "By keeping local firms alive, paving products and aggregates are available in some smaller communities."

SUCCESSFUL OUTSOURCING

The survey asked for information on successes with contracting out, and whether it could be related to activities, contractor types, or contracting methods.

Successful Activities

Fifty-eight responses from 27 states commented on the question about whether some kinds of outsourced activities were more successful than others. While the activities that were reportedly successful spanned the entire spectrum of department functions, the most successful types of activity appeared to be those that called for specialized staff skills or equipment. A tabulation of the comments supplied is presented in Appendix H.

Successful Types of Contractors

Of 62 replies from 30 states responding to the question of whether certain types of contractors (general, specialty, minority, etc.,) were more successful than others, many indicated that the type of contractor was less important than other considerations. For instance, three comments were:

- It is important to match the function with contractors demonstrating expertise and experience and capabilities.
- Type of contractor is not a factor. The qualifications, ability, desire, and willingness of the contractor to perform the work affects the success.
- Well-prepared contract documents and orientation of suppliers on individual purchases positively affects individual supplier's performance.

In all, 29 replies from 19 states said the type of contractor was not a factor in success. Twenty-four replies from 17 states said it was, with a majority indicating that outsourcing with specialty contractors was the most successful experience.

Successful Outsourcing Methods

Fifty-nine replies from 28 states addressed the question of whether the outsourcing method affected the likelihood of success. They typically indicated that each method had its own advantages and drawbacks and most appropriate areas of application.

Some examples of comments are grouped by type of contract below:

- Low Bid
  Low bid ensures no subjectivity in contract award.
  May restrict flexibility.
  Low bid promotes competition and yields cost savings.
- Negotiated Fee
  Fee method provides greatest benefits.
  In design, fee ensures consultant is selected on qualifications.
  It helps define the scope of service.
  Save dollars.
- Sole Source
  Most effective when seeking a highly specialized service.
  Ensures the product or service desired.
  No learning curve, solid expertise, and time savings.

Twenty-five replies said that the contracting method made a difference but qualified their remarks, as in this case: "Yes. But not as significantly as clearly defined scope of work, understanding of task, agency measurement and applied management tools [for] evaluation and adherence to specifications, procedures, policies, etc."

A New Jersey response noted that "cost+time" [A+B Bidding] significantly improved project delivery time and suggested that the combination of cost, time, and quality might be even more beneficial.

PROBLEMS FROM OUTSOURCING

A survey question asked "What problems have been experienced as a result of contracting out?" Fifty-seven comments from 27 states are summarized in Table 12 (which totals more than 57 as many replies pointed out more than one problem).

Quality of work or poor performance was most frequently mentioned, with the related problems of timely completion, failure to complete, or poor schedule maintenance a close second. The problems of contractor competence or knowledge of state procedures were cited 10 times, with cost factors (claims, overruns, and the high level of project costs) mentioned almost as frequently.

TABLE 12
PROBLEMS RELATED TO OUTSOURCING

Problem	Frequency Cited
Quality of work	20
Time of delivery	16
Contractor knowledge	10
Contract process	9
Costs	8
Monitoring	4
Other	6
None	7

Several in-house problems were identified. Difficulties with the outsourcing process included control, coordination, time involved in lettings and in execution. Also mentioned were the staff burdens and costs in monitoring. One comment noted: "Not all consultants or contractors are equal. Contract administration and monitoring requires very skilled staff." Another staff related comment was:

> When contracting is necessitated by the fact [that] you no longer employ personnel with expertise in a certain area, you lose "bargaining power" with the contractor. Consultant Engineering has had some coordination problems.

To elicit further comments on problems, the survey questioned whether problems could be related to: type of activity, type of contractor, contracting method, or contract management procedures.

Type of Activity

Twenty-two replies from 12 states said that the problems could be related to the type of activity outsourced. General comments like those below were offered:

- Need to match job with appropriate contractor.
- Some technical jobs require that for consistency and quality of product, in-house employees be used.
- New field of expertise for our personnel and/or the contractor.
- Contracts in environmentally sensitive areas can be a problem.

Type of Contractor

Twenty-four replies from 16 states commented here. Most answers pertained to the quality of the contractor as measured by good or bad performance. One comment was: "Unqualified general, specialty, minority [contractors] or another public agency may be poor performers if not properly oriented." Another noted that, with specialty contractors, the in-house expertise may not be adequate.

Contracting Method

Twenty-four replies from 15 states reported that the contracting method could be a source of problems. Some general comments were:

- Contracts with consultants (especially) don't have enough "teeth" or leverage to force them to deliver quality goods on time. Need incentive/disincentive clauses?
- It's not the contracting method, but the Department overview and the consultant's qualifications that have the most influence.

Most comments pertained to the low-bid approach. Examples were:

- We generally have more problems with low bid contractors because we have an open prequalification process.
- Low bid not always the cheapest life-cycle of construction cost.
- Low bid does not allow flexibility to throw out an unreasonably low bid.
- Possibly low bid causes some problems with contractors trying to cut corners and time, to increase profit margins.
- Low bid selection is more likely to result in problems.
- Low bidders don't always provide the best products.

Contract Management Procedures

General comments on this issue related to both staff issues and procedures:

- Clearly defined procedures are an asset to both agency and contractor.
- Both the Construction Project Administration Manual and Standard Specifications for Roads and Bridges are under continuous revision.
- It is very important to hold the contractor accountable for his actions.
- Contract managers may be different people from those who wrote the specifications.

Contract management can have different interpretations.

- Most contracting processes are at times cumbersome.
- Some contract managers can work better with a poor contractor than others.

Concerns expressed with regard to project monitoring were:

- Each district office monitors progress and acceptable performance, resulting in some inconsistency across the state.
- Division's project manager needs to spend more time on project.
- Control language in the contract may be inadequate. Also, contract oversight is inadequate.
- Contract performance criteria must be established and monitored to assure quality results.
- If strict performance requirements are not maintained and demanded, this can have a negative impact.

EFFECT OF OUTSOURCING ON AGENCY STAFF

One survey question asked specifically, "Have studies evaluated the impact of contracting out on the size and makeup of Departmental staff?" Replies from 20 states out of 30 said no such studies had been done. Where such studies were reportedly done, only three replies indicated their availability for review, and only one study was provided. The Florida reply included a copy of "Privatization of Toll Collection: Feasibility Study," (25) done by University of Central Florida staff. In addition to examining the feasibility of transferring toll collection from a Florida DOT staff responsibility to a privatized activity, the study carefully examined the impacts on remaining DOT functions and the present staff involved in toll collection.

Its conclusions include the following comments:

> The analysis indicates that privatization is feasible and cost effective. A private vendor could manage toll operations with satisfactory levels of service quality and security of funds. The Florida Department of Transportation (FDOT) Office of Toll Operations has sufficient expertise and experience to design and manage such an arrangement (25, p.63).

These toll collection operations, which are now operated privately, are described in the next chapter.

CHAPTER SIX

PUBLIC-PRIVATE PARTNERSHIPS

Previous chapters have dealt with the mechanics of contracting for highway services. But contracting out is not the only method of outsourcing. In highway maintenance, other forms were devised in the 1980s or earlier. Arrangements for "Adopt a Highway" and other litter control programs involving either volunteer, nonprofit, or other private-sector organizations could be reasonably described as a kind of outsourcing. In the 1980s, expressions such as "privatization" and "public-private partnerships" also began to appear in the literature. Titles of papers at a 1986 conference included these, for example:

"Private-Sector Road Funding in Texas"
"Private Enterprise and Highways"
"Phasing in the User-Pays Concept on Urban Freeways"
"Intraurban Road Privatization" (*26*).

New approaches to highway programs were being fashioned. At the state level, legislation was being passed to permit the development of public-private partnerships. Such states included Virginia (1988), California (1989), Missouri (1990), Commonwealth of Puerto Rico (1990), Arizona (1991), Florida (1991), and Texas (1991).

A breakthrough on the national level occurred with the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Its Section 1012(a) made it possible for states to support toll facilities with federal funds and facilitated public-private cost-sharing. By facilitating use of federal funding in innovative ways like partnerships, this legislation encouraged many new kinds of projects. State transportation agencies were enabled further in seeking means of bringing private sector organizations into traditional and new highway activities. Since 1991, five states (Delaware, Minnesota, Oregon, South Carolina, and Washington) have passed enabling legislation for public-private partnerships.

Thus, in recent years, public-private partnerships have become a means for bringing together the diverse skills, as well as resources, needed to implement emerging "intelligent transportation systems" and other new highway developments.

Because the expression "public-private partnerships" has taken on many meanings with the passage of time, it is useful to cite some definitions that have been used for these forms of outsourcing.

DEFINITIONS

To begin, distinctions must be drawn between the contracting and partnership processes. Contracting out activities, frequently the means of supplementing state work forces in cases of variable workloads, is a process likely to be rigidly specified and controlled within a sometimes adversarial owner-contractor relationship. Private sharing of financial responsibility is not ordinarily a factor in these circumstances.

On the other hand, "public-private partnership" has been described as:

> A cooperative venture by State and private firms to provide public-use infrastructure or public services that traditionally have been provided by the State alone. At a minimum, a public-private partnership is characterized by the sharing of financial responsibilities between the public and private parties; public-private partnerships are sometimes referred to as privatization (*5*, p.44).

The nature of such partnerships has been described elsewhere as follows:

> Partnerships are relationships in which two or more entities share strengths that are complementary and necessary to achieve a mutual goal. Partnerships involve sharing ideas and resources in a way that improves the efficiency and quality of services or the project outcome beyond that which either party could provide alone. In a true partnership all partners share risks and benefits in the project (*27*, p. I-1).

Another term in use is "partnering." It describes a management concept that is being more widely applied in the traditional construction contracting process. Its purpose is ". . . to develop a proactive effort and spirit of respect, trust and cooperation among all key players in a contractual relationship. . . ." (*28*). As implemented in Arizona, partnering is initiated jointly by owner and contractor. The process begins with a workshop to develop a charter outlining goals and objectives of the partnering team. Though not legally binding, the concept has demonstrably led to "win-win" situations in construction projects.

The lack of precision in concept definition may be due to the broad range of conditions to which the terms are applied. Subsequent parts of this chapter illustrate the diversity that is possible, drawing on both survey returns and examples in the literature.

ISSUES SURROUNDING PUBLIC-PRIVATE PARTNERSHIPS

The evolution of new approaches to highway development brings new legal and financial issues as well as new obstacles that must be overcome. Their natures are described next.

Legal

Guidance on legal issues in establishing partnerships was provided in 1991 by "Legislative Initiatives for Public-Private

Partnerships in Transportation Infrastructure: A Guide for Lawmakers" (*29*). The 200-page report offered information on 10 model partnership mechanisms, an outline of model legislation, copies of state laws and other information useful to agencies preparing to set up such partnerships. Information on legal and other aspects of partnership projects for Intelligent Transportation Systems was provided in a more recent report, "Partnerships in the Implementation of ITS" (*27*). Appendixes to this document summarized the status of laws in 1993 in 11 states, and included sample agreements and examples of partnership related materials.

Another publication, AASHTO's "Innovations in Transportation Financing" (*30*), lists those states with laws authorizing the building, operation or management of privately owned transportation facilities. One appendix presents the enabling legislation for partnerships in 10 states.

In response to the present survey, nine states reported special legislation to permit partnerships; among these, Arizona, Florida, Iowa, and South Carolina returned copies of legislation authorizing either specific projects or the general use of partnerships. As the details are readily available in the other sources (*27,29,30*), they are not provided here.

Financial

ISTEA 91 created new financing opportunities for highway construction. These are also described in the references cited immediately above. More recently, new techniques were provided through the Innovative Financing provisions of the National Highway System Designation Act of 1995. They included the following opportunities that may be of interest with respect to public-private partnerships:

Federal Share on Toll Projects
: This provision sets the Federal share for toll projects on highways, tunnels, and bridges at a maximum of 80 percent of eligible costs.

ISTEA Section 1012 Loans
: States can lend Federal-aid funds to toll and nontoll projects with dedicated revenue streams.

Matching Credits for Materials or Services Donated to Federally Assisted Projects
: This provision allows private funds, materials, or assets to be donated to a specific Federal-aid project and permits the state to apply the value to the state's matching share (*31*, Supplement).

Though little used to date, these provisions may expand the possibilities for partnership development.

Overcoming Barriers

Institutional and other barriers can be expected in establishing public-private partnerships. General obstacles of many kinds related to the participants and concerned communities include the following:

Diverging missions
Mistrust among partners
Incomplete or untimely communication
Lack of fully defined roles
Resistance to change
Restrictive procurement/contracting regulations
Lack of government support at all levels (*32*, p.11).

As the same source points out, the private sector partners may have reservations about: their involvement with the public sector; intellectual property rights; and market uncertainties. Other concerns include risks relating to finances, timing, and technology needs.

State laws may create legal obstacles. For example, California's state constitution, whose Article VII established the state's Civil Service System, has been interpreted in ways that limit the state's ability to contract. The state of Washington has laws with a similar inhibitive effect. Other barriers of a legal nature include questions of liability, procurement, privacy, and environmental issues.

Institutional barriers include political opposition, inertia or resistance to change, multijurisdictional coordination, cultural differences, and misunderstandings.

Views of state transportation agency staff on the question of partnership barriers were summarized in a 3-page table of "Innovative Transportation Financing" (*24*, p.40–42). Additional impediments included "low traffic volumes for proposed projects," "periodically weak economic conditions" and problems with "public acceptance of tolls and other necessary aspects of privatization."

Table 13 is a summary of the types of barriers that can be encountered, an assessment of their causes, and possible solutions in overcoming them (*32*, p.12). Clearly, in the face of such obstacles, the process of establishing potentially successful public-private partnerships is one requiring careful planning and development.

INITIATING A PUBLIC-PRIVATE PARTNERSHIP

Guidelines to setting up a partnership arrangement can be found in numerous sources. One source gives the following mnemonic device as a key:

Prepare your goals and objectives
Assess potential for partner contribution
Refine partner selection criteria
Talk to prospective partners
Negotiate
Evaluate performance and communicate through relationship
Remain flexible (*27*, p.III-6).

Putting such guidelines to work through a 3-step process is suggested in another source (*32*, p.13–16). Pointers are given on tasks to do before reaching a decision on a partnership, upon start-up, in identifying partners, and for organizing a

TABLE 13
BARRIERS TO PARTNERSHIPS, THEIR UNDERLYING CAUSES, AND SUGGESTED SOLUTIONS (*32*, p.12)

Barriers	Causes	Solutions
Lack of private sector involvement	Lack of long-term commitment from public sector, uncertainty of ITS market, restrictive procurement, absence of intellectual property rights	Statement of commitment; prove market; determine costs/benefits, price sensitivity; examine alternatives to government procurement procedures and intellectual property rights
Mistrust	Competition, differing organizational cultures	Team-building exercises; neutral facilitator
Incomplete/untimely communication	Lack of fully defined roles, adherence to organizational cultures	Prescheduled, consistent meetings; planned communications with upper-level managers
Uncommon project visions	Diverging missions, interests	Neutral facilitator; partnering process; vision/mission statement
Accountability	Lack of fully defined roles	Issue resolution process chart; clearly define roles
Untimely local government involvement	Lack of inclusion in partnership	Careful stakeholder identification; realization of local government importance
Public sector adaptation to partnership concept	Untraditional arrangement, traditionally client-contractor	Training
Difficult decision making	Diverging missions, interests; partnership too big	Formation of executive committee; authority at lowest level
Absence of long-term funding	Uncertainty of ITS market, high capital costs, uncertainty of public benefit	Investigate time frames for all funding sources; determine political base of support; prove ITS market, public benefit

kick-off workshop. The process description concludes with additional hints for ensuring success.

The circumstances in which a partnership may be developed are highly variable, ranging from all-public to all-private sponsorship. Figure 3 (*33*, p.27) shows basic characteristics of six different levels in the range from all-public to all-private, and shows the nature of the structure, finance, and risk-taking associated with each.

Within an overall framework, several structural models for partnerships can be employed to divide the responsibilities for development and operation between the public and private partners. They are described below.

Build—Own—Operate

The public sector has an infrastructure project it cannot fully finance, but to which it may provide support through activities such as granting right-of-way and underlying land. The private sector builds a facility, using its own capital. The private entity then owns, operates, and collects revenues on the facility for an unlimited time. Ownership of the right-of-way still belongs to the government agency.

Build—Operate—Transfer

The public sector awards a private contractor a concession to finance, build, own, and operate a facility for a limited time period after which the facility is transferred to the sponsoring government free of charge. This form of partnership is used in toll roads internationally.

Build—Transfer—Operate

The private sector finances and builds a facility, but transfers ownership to the government immediately after construction is completed. The private sector then leases the facility from the government, operates it, and collects revenues for a limited franchise period, after which all rights to the facility are transferred to the government. Toll roads in California pioneered this approach.

Buy—Build—Operate

The private sector buys an existing facility from the government. The private sector expands and/or repairs it, and then operates and collects revenues on the facility on a permanent basis. The public sector has ongoing responsibilities for ensuring access to the facility.

Lease—Develop—Operate

The public sector leases an existing facility to the private sector. The private partner expands and/or repairs it, and then operates and collects revenues on the facility for the duration of the lease.

Model	*Justification*	*Structure*	*Finance*	*Risk Borne*
Traditional New Public Highway Delivery	System-wide needs	Public ownership and operation	Dedicated and general revenues (toll-free)	By government and general public
Traditional New Public Toll-Road Delivery	Segment traffic, characteristics	Public authority owns and operates	Non-recourse debt covered by tolls	By government and revenue-bond holders
Innovative Financing for New Public Roads	Local project-related benefits	Public ownership and operation (authority or special district)	Traditional sources supplemented by fees and extractions	By government with some sharing through fees and exactions
Blended Public-Private Financing for New Public Toll-Roads	Local needs and segment traffic	Local inter-governmental authority	Wide open blending, including traditional sources and private extractions	Shared by local government, bond holders, contributors, and subordinated lenders (contractors)
Public-Private Partnerships for New Road Capacity	Local needs and project-related benefits, and segment traffic	Private with strong public role in framing concessions	Wide open blending with substantial private equity	Shared public-private
Privately Supplied New Highways	ROI including capturable project-related benefits	Private with limited public role on concessions	Largely private	By private developer

FIGURE 3 A comparison chart for key features of models of highway delivery *(33)*.

Temporary Privatization

The private sector takes over operation of an existing facility, expands or repairs it, and operates it with a user fee until the private sector partner collects enough revenue to recover the cost plus a reasonable return. The public sector ensures that the facility continues to operate as required by law.

Wraparound Addition

In this model, the private sector expands an existing government-owned facility. This may include the addition of a private air terminal to an existing public airport. The private sector holds title to the addition only *(27)*.

Last, several stages in project development have been identified, based on experience in actual cases. "Timeline For Development of a Public-Private Partnership" *(33, p.29, see* Appendix I) names the typical life-cycle stages as follows: project genesis, project selection, financing, construction, and operation. It further describes the activities associated with each stage.

EXAMPLES OF PARTNERSHIPS

A summary of the partnerships in place in the early 1990s can be found in the AASHTO report "Innovative Transportation Financing" *(30)*. Selected data have been reproduced here in Appendix J.

In the present survey, replies from 13 states identified projects they considered partnerships. Examples are summarized here, beginning with the smaller or simpler situations and proceeding to those more complex and costly in nature.

Small-Scale Arrangements

The survey made for AASHTO's "Innovative Transportation Financing"*(30)* questioned whether any transportation facilities in use or under consideration were either privately owned or the result of a public-private partnership. Major projects like toll roads and such facilities were most frequently named in response. Some states noted smaller projects however, such as developers providing minor improvements or donating right-of-way.

North Carolina DOT has had a program for entering into agreements with developers for highway construction. The developers typically prepare the planning document, design the project plans and specifications, provide all right-of-way, and adjust utilities. They or the DOT may construct the facility, and the DOT will typically reimburse the developers for 50 percent of the construction cost.

Current survey responses also identified the following programs as types of partnerships: "adopt a highway" litter control and beautification (Louisiana and Pennsylvania), and the use of logo signs to advertise private roadway services (Georgia).

Privatization of rest area maintenance and operations is another example of small-scale partnerships and has been practiced since the 1980s, when AASHTO formed a task force to examine the feasibility of commercially developed rest areas for the Interstate system. The resulting report (*6*) concluded that the concept was feasible and offered 14 recommendations regarding implementation.

Responses in the present survey regarding rest areas were relatively few. While 14 states reported outsourcing some aspects of rest area activity, none identified the arrangements as partnerships.

Other forms of small-scale public-private partnerships are those involving Transportation Management Associations (TMAs). In many cases, these partnerships (created to address traffic congestion problems at the local level) involve developers, major employers, and local and state public agencies. Good examples from across the nation are given in "Transportation Management through Partnerships" (*34*). While not emphasizing state DOT roles, this report clearly shows how public-private partnerships can successfully overcome local congestion problems through joint efforts.

Intermodal facilities have also been described as public-private partnerships. In Maine, a truck-to-rail transfer facility is being provided by the Maine DOT with material, equipment and services contributed by a private rail company (*31*, p.5). In Ohio, state, local, and private financing is being used for a rail-highway interchange that will be operated by a private entrepreneur (*35*, p.12).

Partnerships also include activities like areawide maintenance, interchange construction, and highway operations. The current survey response from Michigan described as a public-private partnership its arrangements for outsourcing freeway maintenance in both Lansing and Detroit. Many states have entered into joint agreements with private developers in regard to interchange construction. "Innovative Transportation Financing" (*30*) presents a table (see Appendix J) that shows Arizona, Arkansas, Ohio, and Tennessee so involved. In the current survey, Hawaii identified two projects, and Michigan named an interchange reconstruction on I-75 and a new interchange on I-94 as similar examples.

One unique project is the King County parking facility listed in the Washington DOT reply. While other partnership highway projects in Washington have either been stopped or placed on hold, this one was advancing in early 1996.

The privatization of toll collection operations on Florida's Orlando-Orange County Expressway system illustrates a different kind of project. In 1995, operation and management of eight mainline and 34 ramp toll plazas was transferred from Florida DOT to a private contractor, primarily to reduce operating costs.

> The Expressway Authority's approach to this project gave the toll operations contractor latitude and flexibility to develop procedures that reduce idle employee time, conserve effort and expenses, and continue to meet standards of performance and controls (*36*).

The toll collection transfer also helped in the Authority's goals for use of disadvantaged and women's business enterprises, and in supporting state initiatives for downsizing government.

Applications of intelligent transportation systems (ITS) also have offered partnership opportunities. Six case studies of such arrangements are described in "Partnerships in the Implementation of ITS" (*27*):

ADVANCE—Chicago area travel information service
Advantage I-75—I-75 corridor trucking facilitator
HELP/Crescent—Western states trucking facilitator
TRANSCOM/TRANSMIT—New York/New Jersey transportation management
Travtek—Orlando in-vehicle information services
Westchester Commuter Central—Westchester, NY information service.

These studies describe the makeup of the partnership organizations and cite the risks and benefits affecting participants. Additionally, Colorado DOT has initiated partnership programs for testing ITS on the I-70 corridor in the Denver area.

Large-Scale Projects

The opening of two major projects in 1995 demonstrated the potential effectiveness of public-private partnerships. One was SR91 in California, and the other was the Dulles Greenway in Virginia.

The provision of express high-occupancy toll (HOT) lanes in the median of the Riverside Freeway (SR91) had its beginnings in 1989 with passage of Assembly Bill 680 (AB680) by the California state legislature. This bill authorized Caltrans to enter into agreements with private entities to build and operate four highway projects. The Route 91 facility is the first of the four to be completed. It was developed as a build-transfer-operate (BTO) rather than BOT arrangement, as a means of limiting liability for tort claims arising from use of the facility. The 10-mile highway was built by a contractor who then transferred ownership to the state, which in turn leased the facility back to the contractor who operates it. This $126 million project is:

> . . . the world's first test of a fully automated highway, including an all-electronic toll collection, video enforcement, auditing, accounting and transaction clearing system. . . [It] may prove the political viability of tolling new, congestion-priced capacity to existing, free public highways (*37*, p.2).

Saving peak-hour commuters 20-30 minutes in each direction, the California Private Transportation Company had issued more than 30,000 transponders by March 1996.

In Northern Virginia, a new freeway has been developed and opened in the corridor serving Washington's Dulles International Airport and growing suburbs.

> The Dulles GreenWay in Virginia, first proposed in 1988, required an enabling act from the state legislature, approvals from Virginia DOT on alignment and construction plans, changes in local master plans, and a lease from the Metropolitan Washington Airports Authority before beginning construction. The 14-mile toll road, costing $326 million, is privately owned and operated (*38*, p.18).

In other partnership related actions in 1995, the Oregon legislature authorized innovative methods for the development of two corridors as tollways in a public-private partnership approach. Other states with partnership projects in various stages of development include Delaware and Minnesota.

In Missouri, construction began in 1996 on a bridge spanning the Lake of the Ozarks that will be privately owned and operated. Bridge approaches, costing $5.5 million, will be the responsibility of the Missouri Highway and Transportation Department. The bridge, costing $18.2 million, will be operated by the Lake of the Ozarks Community Bridge Corporation. "Tolls will pay for bonds issued to cover construction cost, and tolls will be eliminated after bonds are retired in about 30 years. The bridge will then become part of the state highway system." (News release, Missouri Highway and Transportation Department, March 15, 1996).

Some partnership proposals for new toll facilities or enhancements of existing congested routes have met with less success. In Arizona, plans were shelved because of public opposition to the concept of tolls. In South Carolina, a proposal to bypass the community of Conway was defeated by referendum, although another proposal, the Sea Island Expressway improvement, was still being advanced. A similar reaction stopped or slowed initiatives in Washington. As the survey response received from Washington DOT cryptically noted:

> Bill passed 1993 Legislature to establish pub/pvt partnerships for toll roads/facilities. WSDOT selected 6 projects as test cases. Local opposition to toll roads killed 2 outright, delayed 3 others, while 1 (parking facility) went forward. 1995 Bill required establishing voting districts. Last Legislature only funded one for continued study.

A more detailed view fully explains the changes that occurred.

> However, several factors combined to completely reverse the State's policy position. A vocal minority opposed the projects. An election changed the dominant party of the state legislature. And there was a lack of convincing public evidence of a serious shortfall in State funds that would prevent the construction of the projects in a reasonable time period. Significant additional requirements were placed on the projects, with both the State Senate and House passing legislation to modify the original legislative intent. . . . Even if these new legislative requirements were found legally unenforceable, private entities were faced with the realization that public policy risk was still a significant obstacle (*39*, pp.10–11).

SPECIAL CASES OF OUTSOURCING

There are some instances in the operation of public-private partnerships where the public agencies provide services to the private entities. There are also many circumstances where partnership agreements are forged between two or more public agencies, either at the same or different levels of government, to provide needed public services.

DOT Services in Public-Private Partnership Activities

A few instances have occurred in public-private partnership agreements where public agencies provide services to the private entities. Examples follow.

Caltrans contracts to provide services to California Private Transportation Company (CPTC), the private corporation operating the new SR91 express HOT lanes. Caltrans provides maintenance services, and the California Highway Patrol provides police services on this facility (*37*, p.4). Caltrans also provided environmental studies under contract for the SR125 partnership project.

Minnesota's partnership agreement legislation contains the following language: ". . . sharing facilities, equipment, staff, data, or other means of providing transportation-related services."

Iowa legislation allows the DOT to enter into agreements with utility companies and to acquire right-of-way for the relocation of utility facilities.

Under Virginia's Public-Private Transportation Act ". . . the state may be called upon to: provide finished design of construction plans, acquire right-of-way, and condemn for right-of-way."

Public-Public Partnerships

Only three states reported arrangements for providing services to other public agencies under contract. One example given earlier is the case of New Jersey DOT's Bureau of Materials Engineering and Testing in providing the New Jersey Turnpike with testing services at lower costs than private contractors (*40*, p.185).

Missouri's survey return reported that the state performs inspections and contract review of soil surveys on city and county highway connectors.

Pennsylvania DOT provided a description of a new 1996 approach to joint involvement of PennDOT, county, and other local governments to perform highway maintenance functions more effectively. The project began when PennDOT partnered with the Iacocca Institute of Lehigh University to translate proven private/public sector Agility Concepts to DOT activities. PennDOT, the American Federation of State, County, and Municipal Employees, and eight local governments subsequently developed a pilot project for exchanging tasks such as striping, mowing, ditch cleaning, and customer surveys among the agencies. "The results of the "Proof of Concept" were very positive, saving the taxpayers nearly $25,000 over a

six-week period and changing the way some of our highway maintenance services are delivered." (Letter from Deputy Secretary for Administration Robert C. Wonderling to District Engineers and others, October 1, 1996).

Though not reported here, it seems virtually certain that many states have regularly provided technical services to counties and local communities, and have had other services provided in return by the local governments, in what can be effectively described as public-public partnerships.

LESSONS LEARNED

Experience with both success and failure in public-private partnerships has been sufficient to report on lessons that have been learned. At the policy or program level of implementing partnerships, the Federal Highway Administration has concluded that:

- *Well-organized and careful public outreach is far and away the greatest need.* Continuing education and media relations must explain the goals and potential benefits of partnerships. Commitment of political bases in the executive and legislative branches, and the fact that public funds cannot meet the program needs, must be demonstrated.
- *The state should establish a formal, scheduled process for private entities to respond to.* A formal procedure by which the state requests proposals from the private sector, sets milestones, and demonstrates fairness and commitment, is needed to reduce risks perceived by the private sector participants.
- *The state commitment to the program should be clearly demonstrated.* Advance commitments regarding the state role in such issues as rights-of-way, environmental permits, grants and exceptions, reduces the perceived risks of the private sector.
- *The state should negotiate with flexibility.* Restrictions on the state's ability to negotiate (referendum needs, local jurisdiction veto possibilities) raise risk levels for the private sector.
- *Negotiated regulation is preferred over utility-type regulation.* A negotiated rate-of-return procedure provides more incentive for the private sector to operate in a market-oriented manner than the set price, set return arrangements typical with utilities.
- *Liability issues are important risks that must be managed.* State support and protection of the private entities against excessive tort liability exposure, through the selected partnership model (B-T-O for example), mitigates against another risk for the private sector (*39*, p.19).

At the project level, similar lessons have been learned. Drawing on the successful case of California's SR91 project, the following conclusions have been offered (*41*):

1. The public sector should retain the option of conducting environmental permitting activities, however, the private sector should be expected to reimburse the public for the permits.
2. The public can speed the project financing process and reduce the rate-of-return demands of investors by creating an infrastructure bank or revolving fund that is authorized to provide various forms of credit enhancement (e.g., guarantees, direct loans,etc.) to privately financed projects.
3. The government and its private partners must spare no effort in obtaining local support for proposed projects. In other words, select a project that has strong local political and constituent support.
4. The private sector investors are highly sensitive to the environment in which they are being asked to invest.

Regarding the comment on infrastructure banks above, the National Highway System Designation Act of 1995 permits the U.S.DOT to enter into cooperative agreements for the establishment of State Infrastructure Banks. Once established with Federal seed money, these organizations offer a menu of loan and credit enhancement assistance and give states more flexibility in project financing.

Three other lessons regarding the selection of projects for implementation through partnerships have also come from the California SR91 experience.

1. Project selection should generally be left to the private sector (if the rules permit) as the public simply does not have the same criteria for project selection that would be found in the private sector.
2. It is generally better to select a project of modest size for the first effort particularly in the early stages of a public-private partnership program.
3. Select a project that adds significant value or needed capacity to the transportation system. (Unpublished remarks by Carl B. Williams, MIT, 1995).

CHAPTER SEVEN

CONCLUSIONS

State transportation agencies are functioning today in a climate of changing social and economic conditions quite unlike those of preceding decades. Worldwide, nations have been moving in the direction of privatizing many previously government-managed activities and services. Additionally, within the United States, the private sector is taking actions to downsize and outsource that have been watched with interest and emulated in many state capitals. The present survey, despite the fact that neither all states nor all outsourcing activities within some responding states are represented, has provided useful insights into the effects of these changes on the agencies.

Information for Part One of the survey for this synthesis was supplied by 34 states; information for Part Two, a more quantitative assessment of outsourced activities, was provided by 30 states. While such a survey can only be a one-time snapshot of the events that are taking place, much about the variability of privatization impacts from state to state has been revealed. The survey responses and the accompanying literature review are the basis for the conclusions that follow.

Five major conclusions appear warranted from this study.

Most states are feeling the impacts of a political and public climate that mandates a reduction in the size of many if not all state agency employment rolls, not solely transportation agencies. In some states, aggressive state executive branch units have devised procedures for identifying functions within agencies that can be effectively outsourced. In states where no formalized procedures may be applied to identify tasks that can be privatized, staff numbers must still be reduced to meet policy or legal requirements. One result is that specialized skills as well as in-house production capability are lost, while an equal or greater volume of work must still be accomplished. Thus, management must proceed to contract for work with the private sector in order to maintain schedules. Actions of this type appear to be occurring across the whole spectrum of agency functions, from administration and training to planning, design, construction management, operations, and maintenance.

The trend toward outsourcing more and more activities and larger work volumes is seen to be increasing in all regions of the country, but in varying degrees, according to the qualitative comments reported in chapter 4. The quantitative survey responses reported in chapter 2 further show that the percent of work being contracted out by function is going up, and that an increasing number of functions are subject to outsourcing with the passage of time. The patterns in outsourcing seem to be as variable among states as are the characteristics of the states themselves. It has not been possible to point to many consistencies among the states in the range of activities contracted, their dollar volumes, or the percentage of total work that is being outsourced.

Despite the increased pressure to outsource, from whatever cause, most work across the range of department activities is still performed in-house. The tendency appears to be that outsourcing is a way of handling peak loads and projects requiring special skills not available internally. Few cases were reported of models or formal procedures that aid in determining what parts or proportions of an activity should be outsourced. The decisions in many cases are not "cost-driven," thus cost-effectiveness analyses of whether to perform work in-house or to outsource it do not appear to be widely used.

With respect to assuring the quality of work performed by contractors for the transportation agency, survey respondents suggest that the basic agency responsibility to safeguard the public health and safety is well-protected. Indeed, in privatization jargon, this responsibility might be called the true "core competency" that cannot be outsourced. Survey responses indicated that contract monitoring processes were well-established and followed. Considering that the agencies have decades of experience in contracting major activities like construction, design, and maintenance, the extension of monitoring or quality assurance practices to newer activities being outsourced should be a natural consequence of events.

In a period when funding for major highway capital investment is limited, the concept of public-private partnerships is one emerging mechanism that facilitates timely and effective undertakings. Others include various innovative financing mechanisms created in recent national highway acts. Experience with partnerships has ranged from relatively small agreements between states and property developers to private construction of new highways costing hundreds of millions of dollars. Properly planned and executed, a variety of partnership forms exist and can be tailored to successfully meet individual project needs. At the same time, if launched with inadequate awareness of potential pitfalls, partnerships can also lead to costly failures. The literature provides useful lessons.

The survey results showed, sometimes by explicit comments of respondents but perhaps more often by gaps in the information provided, that additional research might provide tools or information useful in considerations of outsourcing. Three topics could merit attention: 1) identifying "core competency," 2) assessing whether and what portions of an activity to outsource, and 3) examining the human resources aspects of outsourcing.

Assessing Core Competency—A key issue in private sector considerations of outsourcing current in-house activities is the identification and retention of the essential elements of the enterprise. A similar concern must exist in a public agency charged with activities affecting the public welfare. Models for identifying functions that can be outsourced from public agencies may infer that remaining tasks are part of the core competency. A better way to proceed, however, would be to

develop models that can be used to define the basic agency mission, identify key activities necessary to support its accomplishment, and thereby establish the core competency.

Assessing Whether to Outsource an Activity—When the possibility of outsourcing an activity is an option not driven by external policy or legal requirements, by the need for special skills, or by imbalances of work force and workload, techniques to assess contracting feasibility could be helpful. Some techniques are available: the Florida Decision Model (*18*), the Pennsylvania Maintenance Model in Appendix E, and the Arizona Handbook (*11*). Evaluation of these and other existing models, consideration of their transferability to other states, and development of modifications as needed, might be a very useful activity.

Human Resources Aspects of Outsourcing—In most if not all activities, when production is shifted from in-house to an external private contractor, a change in the size and character of the in-house workforce is inevitable. The nature and degree is obviously highly variable, depending on the tasks involved. But old skills may not be needed while new ones, of project management, for instance, are. Perhaps because most outsourcing has been driven by peak work load and skill needs, little information was obtained in the survey in response to a question on the impact of outsourcing on department staff. A survey on what roles have been played by retirement, layoffs, attrition, retraining, and so on, in changing the size, makeup, and cost of agency staff may serve to indicate trends in future human resource needs within transportation agencies.

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APPENDIX A

Survey Form

QUESTIONNAIRE
National Cooperative Highway Research Program
NCHRP PROJECT 20-5
SYNTHESIS TOPIC 27-06

OUTSOURCING OF STATE HIGHWAY FACILITIES AND SERVICES

There is a need to assist state transportation agencies by making available the latest information on evaluation methods for objectively comparing outsourcing (contracting out, commercialization, and privatization) of programs and activities traditionally performed by government personnel to those performed by private organizations. The objective of this research is to identify the techniques and procedures that agencies use when deciding to use public or private sector resources for accomplishing an activity or mission, and to identify the evaluation techniques used (e.g., public policy, cost effectiveness analysis, make or buy analysis).

In addition, it is expected that this research can identify the extent to which the outsourcing of highway facilities and service activities is undertaken by the states, which actions have been considered beneficial (as well as those that were not), the reasons for undertaking these actions, and their relative cost. This survey is divided into two parts: the first is intended to identify the qualitative, or policy aspects of outsourcing; the second is directed to more detailed information. Part Two will be more difficult to complete, but any effort at completion will be most appreciated.

DATE: _____

AGENCY RESPONDING: _____
Person: _____
Title: _____
Address: _____

PERSON TO WHOM QUESTIONS ABOUT THE RESPONSE SHOULD BE DIRECTED:
Name: _____
Title: _____
Phone: _____

PLEASE RETURN COMPLETED QUESTIONNAIRE AND ANY SUPPORTING DOCUMENTS TO:
David K. Witheford
11423 Purple Beech Drive
Reston, Virginia 22091
703/860-5017

PART ONE - QUALITATIVE ASSESSMENT

SECTION ONE - DETERMINING WHETHER TO CONTRACT

1. Are some activities contracted out because of Legal or Policy requirements? If so, please describe the activities and nature of requirements.

2. What other considerations either force or encourage a decision to contract?

3. What cost comparison analyses are used in the decision process and what items are typically included? (Please provide sample forms if used.)

4. Are other standard procedures used to determine whether to contract out an activity? Please describe or provide sample forms.

5. What factors or considerations, if any, work against a decision to contract?

6. Do current policies or legislation suggest that a greater amount of contracting out of highway services will occur in the future?

SECTION TWO - CONTRACTING PROCEDURES

A. PRE-AWARD STAGE.

1. Please check methods by which contract services are obtained:
   Low bid __
   Negotiated fee __
   Sole source __
   Other (please describe) _____

2. Are pre-award procedures handled by central management or by the functional unit normally involved in the activity?
   Central Management __
   Functional Unit __

   What criteria determine where the process is done?

3. Are contractors prequalified? Yes __ No __

   For which activities, if any, is prequalification not used?

4. How are risk-sharing and/or liability questions resolved in the contracting process?

5. If alternative bids or value engineering proposals by contractors are permitted, please describe any related restrictions, criteria, and specifications that apply.

6. What incentives/disincentives (e.g., liquidated damages) are typically part of contract time controls?

B. POST-AWARD STAGE

1. Does the location (i.e., central administration or functional division) of contract management (e.g., management of change orders, claim evaluation, payments, incentives/disincentives, etc.) vary according to the type of contract (e.g., low bid, negotiated fee, etc.) or nature of activity being contracted? Please give examples.

2. Is contract monitoring (inspection, sampling, testing, other quality assurance) performed by functional divisions or other departmental units? Please describe.

3. What procedures exist to deal with inadequate performance, lack of responsiveness, or delays in completion by contractors? Who implements them? Please describe.

4. Which departmental units are responsible for contract completion and acceptance procedures and administration of guarantees and warranties?

5. Are procedures for contractor performance evaluation formalized? (Please provide sample forms if used)

6. How are such evaluation reports subsequently used, as in prequalification procedures, for example?

SECTION THREE - EVALUATION OF CONTRACTING PROGRAMS

1. Is the Department satisfied with results obtained from contracted services?

   Yes __ No __

2. Please identify the general benefits from contracting out that typically ensue to the following groups:

   A. To the Department:

   B. To the contracting industry:

   C. To the general public:

3. Are some contracted activities more successful at providing benefits than others?

   YES __ NO __

   If so, which?

4. Does the type of contractor chosen (e.g., general, specialty, minority, another public agency, nonprofit private organization, etc.) affect the success achieved?

   YES __ NO __

   If so, which choices provide the greatest benefits?

5. Does the contracting method used (e.g., low bid, sole source, negotiated fee, etc.) influence the levels of success achieved?

   YES __ NO __

   If so, which methods produce the greatest benefits?

6. What problems have been experienced as a result of contracting out highway services?

   Can problems be related to any of the following influences?

   The type of activity contracted? YES __ NO __
   If so, which?

   The type of contractor chosen? YES __ NO __
   If so, which?

   The contracting method? YES __ NO __
   If so, which?

   The contract management procedures? YES __ NO __
   If so, which?

7. Are Cost-Effectiveness analyses used to compare the success of contracting programs with in-house performance of the same tasks?

YES __ NO __

Can examples of such comparative studies be provided?

YES __ NO __

8. Have studies evaluated the impact of contracting out on the size and makeup of Departmental staffs?

YES __ NO __

Are such findings available?

YES __ NO __

SECTION FOUR - PUBLIC-PRIVATE PARTNERSHIPS AND OTHER SPECIAL CASES

1. Does special legislation exist to facilitate the development of public/private partnerships?

YES __ NO __

Please describe.

_____
_____
_____
_____

2. Please identify any projects that might be characterized as public-private partnerships (e.g., private toll roads, turnkey projects, joint development, etc.).

_____
_____
_____
_____

3. Can detailed information or reference material be provided for review?

YES __ NO __

4. Does the state provide contracted services to the private sector in any partnerships?

YES __ NO __

Please describe.

_____
_____
_____

NCHRP PROJECT 20-5, SYNTHESIS TOPIC 27-06

"OUTSOURCING OF STATE HIGHWAY FACILITIES AND SERVICES"
SURVEY FORM

PART TWO - CONTRACTED ACTIVITY CHARACTERISTICS

This second part of the survey on contracting out highway services is designed to provide more quantitative information on the subject. The following blank tabulation pages list a wide range of activities that are known to be contracted by state highway agencies, and seek to discover the history, nature and influences on contracting out with respect to different activities.

Clearly, a great amount of information is being requested and a great amount of work will be required to respond completely. Some respondents may choose not to go into the level of detail requested. Others may choose to provide answers on particular functional areas such as maintenance. It is hoped, however, that those departments, or units within departments, having a special interest in the issues surrounding outsourcing will assist this research. The greater the amount of information that can be supplied, the greater the potential value of the results that will be reported later.

The notes below are provided to suggest the nature of information desired in the different columns of the survey form. In some columns, abbreviations are suggested for convenience.

Notes for Column Headings - Part Two

NOTE 1. The year or the decade (e.g., 70's) the activity was first contracted.

NOTE 2. The proportion of the activity that is contracted out, in the following groups: 0-19, 20-39, 40-59, 60-79, 80-99, 100 percent.

NOTE 3. The approximate annual dollar volume contracted for the activity (in million $).

NOTE 4. The type of contractor principally used for the activity: general contractor (GC), specialty contractor (SC), minority or disadvantaged contractor (MC), consultant (C), another state or local public agency (PA), nonprofit private organization (NO), volunteer group (V), other (O).

NOTE 5. Procedure used for selecting contractors: low bid (LB), negotiated agreement (NA), sole source (SS), other (O).

NOTE 6. Basis of payment principally used for the activity: unit price (UP), lump sum (LS), cost plus (CP), hourly rate (HR).

NOTE 7. Factors influencing decision to contract for the activity: legal requirement (LR), policy direction (PD), staff constraints (SC), cost comparisons (CC), specialty skills or equipment (SS), other (O). Please list as many as are appropriate.

NCHRP PROJECT 20-5, SYNTHESIS TOPIC 27-06

"OUTSOURCING OF STATE HIGHWAY FACILITIES AND SERVICES"

PART TWO - CONTRACTED ACTIVITY CHARACTERISTICS

Name of Respondent or Future Contact:_____
Organization:_____ Tel.(__)_____

ACTIVITY	YEAR BEGUN	PERCENT TO CONTRACT	ANNUAL VOLUME	CONTRACT WITH	SELECTION PROCESS	PAYMENT BASIS	DECISION FACTORS
	NOTE 1	NOTE 2	NOTE 3	NOTE 4	NOTE 5	NOTE 6	NOTE 7
ADMINISTRATION							
Training							
Staff Programs							
Database Mgmnt							
Other_____							
PLANNING							
Non-Highway Studies							
Traffic Surveys							
Traffic Studies							

ACTIVITY	YEAR BEGUN	PERCENT TO CONTRACT	ANNUAL VOLUME	CONTRACT WITH	SELECTION PROCESS	PAYMENT BASIS	DECISION FACTORS
	NOTE 1	NOTE 2	NOTE 3	NOTE 4	NOTE 5	NOTE 6	NOTE 7
Research Projects							
Other_____							
DESIGN							
Surveying & Mapping							
Location Studies							
Plans & Specs.							
Envir. Impact Studies							
Design/Build (turnkey)							
Other_____							
RIGHT OF WAY							
Appraisals							

ACTIVITY	YEAR BEGUN	PERCENT TO CONTRACT	ANNUAL VOLUME	CONTRACT WITH	SELECTION PROCESS	PAYMENT BASIS	DECISION FACTORS
	NOTE 1	NOTE 2	NOTE 3	NOTE 4	NOTE 5	NOTE 6	NOTE 7
Acquisitions							
Relocations							
Other_____							
CONSTRUCTION							
Contract Mgmnt							
Materials Testing							
Other_____							
OPERATIONS							
Pavement Markings							
Sign Installation							
Signal Installation							

ACTIVITY	YEAR BEGUN	PERCENT TO CONTRACT	ANNUAL VOLUME	CONTRACT WITH	SELECTION PROCESS	PAYMENT BASIS	DECISION FACTORS
	NOTE 1	NOTE 2	NOTE 3	NOTE 4	NOTE 5	NOTE 6	NOTE 7
Intelligent Transp. Systems (ITS)							
Traffic Info Services							
Toll Collection							
Other_____							
MAINTENANCE							
Roadway Surfaces							
Shoulders							
Roadside							
Drainage							
Bridges							
Traffic Signals							
Traffic Signs							

APPENDIX B

List Of Survey Respondents

State	Part One Reply Supplied	Part Two Reply Supplied	Number Of Part Two Entries
Alabama	x		
Arizona	x	x	35
California	x		
Colorado	x	x	1
Connecticut	x	x	8
Delaware	x	x	6
Florida	x	x	41
Georgia	x	x	7
Hawaii	x		
Idaho	x	x	21
Illinois	x	x	1
Iowa	x	x	6
Kansas	x	x	32
Kentucky	x	x	3
Louisiana	x	x	2
Maine	x	x	26
Maryland	x	x	9
Michigan	x	x	7
Minnesota	x	x	14
Mississippi	x	x	5
Missouri	x	x	10
Nebraska	x	x	5
Nevada	x	x	18
New Jersey	x	x	14
New Mexico	x	x	23
New York	x	x	27
North Carolina	x	x	6
Oregon	x	x	13
Pennsylvania	x	x	27
South Carolina	x	x	17
Utah	x		
Virginia	x	x	24
Washington	x	x	20
West Virginia	x	x	3
Total	34	30	431

APPENDIX C

Arizona Cost Determination Procedures

MGT-2.01 ADOT Competitive Government Services Policy

Effective: August 16, 1995 Transmittal: 95-October

Supersedes: None Page: 10 of 16

ARIZONA DEPARTMENT OF TRANSPORTATION
DETERMINATION OF THE COST OF AN ACTIVITY OR SERVICE

Definitions for Use with the Privatization Cost Analysis Worksheet:

Activity or Service - The specific work that is being considered for privatization.

Desired/Required Production Level - This is the number of units of work to be performed within a selected time frame.

Privatization Cost Analysis - The process of computing the cost to perform a specific activity or service within ADOT.

I. Direct Cost

A. Labor-Consists of the employees/employee hourly rates, number of hours worked and resulting cost directly identifiable to the specific activity or service.

B. Payroll Additive-Consists of the approved ADOT payroll additive rate which covers ERE and converts leave and holidays to accrual. This is computed as a percentage of direct labor.

C. Materials and Supplies-Consists of actual costs of purchasing or manufacturing materials to be used directly in the performance of the activity or service.

D. Equipment Rental-Consists of the Equipment Services Usage Rate for vehicles in-house, or invoices for rental of equipment from vendor to be used directly on the specific activity or service.

E. Utilities-consists of electric, gas, water, telephone, rent, etc. charged to the specific office and prorated to the office's work activities.

F. Travel-Consists of travel charges for employees which directly relate to the activities or services.

G. Professional and Outside Services-Consists of any work for this activity or service which is currently performed by a consultant or other vendor.

II. Indirect Costs

A. Allocated out-of-pocket overhead costs not directly associated with providing the service.

1. Director's Office-expenditures of this area to be allocated department wide.

2. Special Support Services-Expenditures of this area not to a specific project/product to be allocated department wide.

3. Administrative Services Division-Expenditures of this area not to be specific project/product to be allocated department wide.

4. Divisional Overhead- Expenditures of this area not to be specific project/product to be allocated within the specific division only.

5. Operating Unit Indirect Costs-Expenditures of this unit not to a specific project/product to be redistributed to all specific projects/products within the same org/operating unit.

B. Allocated fixed assets overhead costs.

1. Allocation of Depreciation/purchase cost for a previously purchased building.

Exhibit 1 (front)

2. Allocation of Depreciation/purchase cost for previously purchased equipment, such as computers, used to benefit the project/product.

III. Cost to Manage/Administer a Privatized Service

A. Cost to Manage-To insure the services privatized are performed at agreed upon quality, quantity, and frequency levels, periodic inspections should be made. All costs related to performing these inspections would be considered Cost to Manage.

B. Cost to Administer-Procurement and Accounting perform tasks to process billings and pay for privatized services. Cost of these administrative tasks would be considered Cost to Administer.

IV. Unavoidable Cost Associated with a Privatized Service

Relating to the privatization worksheet, unavoidable costs are defined in two categories:

(a) Cost expended prior to the privatization which cannot be readily reduced; and,

(b) Cost required to maintain, within the Department, a defined level of expertise in the service being considered for privatization.

USE AND COMPLETION OF THE COST ANALYSIS WORKSHEET

The cost analysis worksheet is the initial approach to determining the cost of an activity or service provided by ADOT. This approach should be applied to all competitive bid situations. This analysis may be adequate for most smaller scope activities or services.

Additional analysis will be necessary where a larger scope activity or service is involved. The additional analysis would encompass potential increases or decreases in revenue due to loss of grants or additional tax collections. Larger scope activities or services could also have a significant impact on personnel and equipment. The conversion costs related to decreasing personnel and equipment should be calculated and included in the analysis. A privatization cost model and costing forms have been developed by the Office of Excellence in Government for use in these analyses.

The Operating Area and Cost Accounting Section will work cooperatively to complete the analysis. Direct working labor hours are used with the payroll additive to avoid costing which will leave an accrued leave amount at the end of the contract with no offsetting accrual.

The analysis should use actual costs from past experience and adjust them for the current costs. If prior operations were not identified using cost accounting (project numbers, activity codes, etc.), a reasonable estimate of what the costs would be should be developed.

Specific costing is required for all contracts awarded to private firms or the ADOT units.

The Cost Analysis Worksheet included in this policy may be adjusted or altered to clearly present a proper cost analysis which is reflective of the program being analyzed. Written explanations should be provided, where necessary, to provide a clear understanding of the analysis.

The analysis should compute a privatization amount. If contracted out, the budget for the product/service should include the contract amount and the cost of management/administration of the contract.

Exhibit 1 (back)

APPENDIX D

California Cost Measurement Procedures *(7)*

CALIFORNIA COMPETES

Cost Measurement

To make an informed decision whether to contract out the performance of a service, the total cost of providing the service in-house must be compared to the cost of contracting for its performance by a private vendor.

To make an informed decision whether to contract out the performance of a service, the total cost of providing the service in-house must be compared to the cost of contracting for its performance by a private vendor.

The following are answers to basic questions about calculating costs:

Q: *What are the basic components of calculating the cost for in-house services?*

A: The total cost of providing a service in-house is the sum of the direct, overhead and capital costs applicable to the activity.

- *Direct costs:* Direct costs include the wages, salaries and fringe benefits of those working in the particular activity. They also include equipment, supplies, rent, utilities, material, postage, printing and travel. The direct costs must include the cost of each individual contributing to the service, even if such contribution is not full-time.
- *Overhead costs:* These costs include necessary activity support costs—information systems, accounting, payroll and management. In computing these costs, all sources of costs must be included. For example, when apportioning the cost of an executive office, all costs must be included and apportioned to all units under its purview.
- *Capital cost:* Capital costs must include the cost of acquisition, including any borrowing necessary to acquire the equipment.

Q: *How are overhead costs apportioned?*

A: Several methods are available to apportion overhead costs.

- One way uses a pro rata method based on wage and salary shares. Thus, if an activity accounts for 20 percent of the total wages and salaries, 20 percent of overhead costs are apportioned to that activity.
- Another method uses the same idea but calculates shares based on employment, i.e., the number of employees normalized for full-time equivalents employed in the activity relative to all employees covered by the overhead costs.

Cost Measurement, *continued*

Q: *What are the basic components of calculating the cost of contracted services?*

A: The cost of outsourcing equals the sum of the contract charges plus the cost of administration plus conversion costs, less any net revenues generated for the state by the services.

- *Contracting costs:* The bid listed by candidate firms in their responses to the request for proposals.
- *Administrative costs:* This cost includes expenses of procurement, contract negotiations, contract awards, dispute resolution, servicing of the contract, and monitoring and evaluation. Note: it is improper to estimate these costs at zero with the justification that an individual contract does not meaningfully affect the preexisting costs of the contracting state unit.
- *Conversion costs:* These are the costs of converting from in-house performance of services to contracting them out. The costs may include the transfer of government property to the contractor at less than the value of the property.
- *Generation of new revenue:* Some contracts result in the generation of new revenue for the state. Franchises for food and other services at government-owned facilities such as a park is one example. Other revenue might come from the sale of property no longer required by the department as a result of contracting out. These revenues must be subtracted from the cost of service provision.

The cost of outsourcing equals the sum of the contract charges plus the cost of administration plus conversion costs, less any net revenues generated for the state by the services.

APPENDIX E
Excerpt from Pennsylvania DOT Maintenance Contractability Manual

MAXIMUM MAINTENANCE CONTRACTING GUIDELINES

I. INTRODUCTION

A. BACKGROUND

The Pennsylvania Department of Transportation has been contracting progressively more of its maintenance needs since the mid-seventies. This upward trend has not only been due to maintenance force reductions, but also the recognition by the Department that it can be more cost effective to contract maintenance activities. This report was initiated to provide an objective, systematic method to evaluate whether selected activities could be more effectively performed by Department forces or by private contractor.

B. PURPOSE

The Bureau of Maintenance and Operations was charged with the task of developing a method of rating maintenance activities to determine what portions of these functions could reasonably be contracted cost effectively and at comparable quality. This analysis method was to be:

* Applicable to each District equitably with the realization that Districts are unique in many ways and yet similar in others,
* Used as a guideline by the Districts to help determine the appropriate amount of a maintenance activity to be contracted cost effectively,
* Used as a guideline by the Districts to help determine their needed maintenance staffing level directly dependent upon the amount of contracting determined to be cost effective,
* Used as a comparison tool for Statewide analysis.

II. ANALYSIS CRITERIA

A. BASIC ASSUMPTIONS

This report is intended to be complement neutral. The intent is to use this approach to assist a **county maintenance organization** in determining which maintenance activities may be performed most effectively using Department forces and which should be performed by contract. ***NOTE - The scope of this manual is not intended to cover emergency response activities, so it may not be appropriate to use the procedures outlined in this report to evaluate such activities.***

As annual routine maintenance needs are identified, a required unit quantity of work and projected cost is assigned to meet these needs. The amount of an activity dedicated to be contracted removes a proportionate dollar amount from allocated funds for that activity. The remaining needed quantity of work is performed by Department forces. As contracted amounts increase and decrease, the necessary maintenance employee level to complete the needed unit of work is directly influenced. Overall, we need to balance our mix of work methods, so both the winter and summer programs fully utilize our in-house resources.

III. ANALYSIS METHOD

A. CONTRACTIBILITY RATING

In order to determine possible proper levels of contracting for a routine maintenance activity, a method of rating that activity is needed. This method should be based upon logical decision making parameters directly related to available data and specific District conditions. The rating should be dependent upon these parameters with each being considered individually and weighted according to importance. The rating should be a total of the individually weighted parameters. This composite rating of the activity should be compared to a specific standard to indicate the potential to cost effectively contract a portion (or all) of the activity. The system should have the capability of being updated periodically as the activity data is improved and the decision making parameters are proven or revised accordingly.

To address this need, the Bureau of Maintenance and Operations has developed the Contractibility Rating Analysis System (CONTRAS). This system contains decision making elements dependent upon:

* Unit Costs (both Department force costs and contract bids)
* Labor Intensive
* Time Criticality Relative to Project Duration/Completion
* Availability of Contractors
* Volume of Work
* Time Sensitivity for Planning
* Special Equipment / Skills or New Technology Requirements
* Inspection Needs

Further definition of these items is listed on the CONTRAS4 chart in the Appendix.

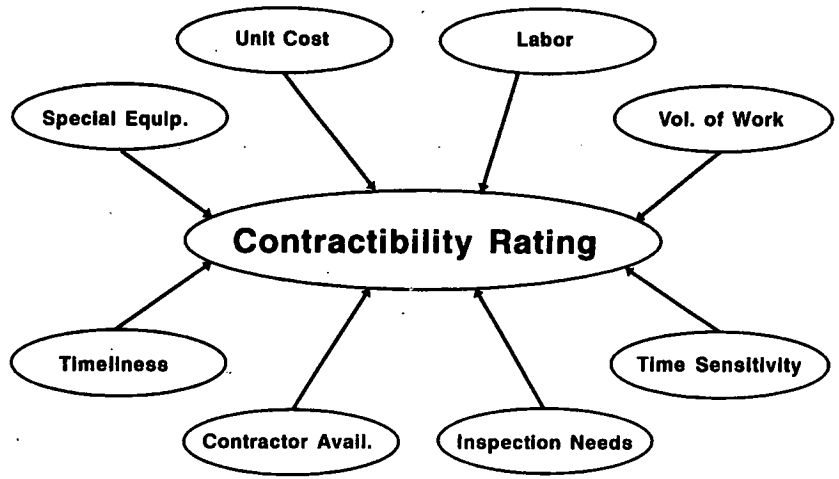
Weighting and scoring factors were determined for each of these items, and these factors may be reviewed on the CONTRAS3 chart. These factors give a minimum contractibility rating of 17 and a maximum of 53. Ideally, if a conclusive comparison was known it might be possible to determine a specific contractibility rating as a cutoff. Any activity below this rating would be a candidate to be performed by Department forces while any activity rating above this level would be eligible to be performed by contract. However, these conclusive comparisons have not been established, so a contracting potential dependent upon the contractibility rating was adopted. Graph CONTRAS5 in the Appendix shows this standard.

B. FUNCTION ANALYSIS

To analyze an activity, the decision making parameters are reviewed and appropriately scored through analysis of available data and maintenance district conditions. The individual scores are totaled to obtain the **Contractibility Rating**. The Contractibility Rating is then compared to the adopted standard (CONTRAS5) to obtain the **Contracting Indicator** or the projected potential for the activity to be performed by contract. The higher the Contracting Indicator figure, the greater the argument that the activity would be completed most effectively by contract. Conversely, the lower an activity's Contracting Indicator figure, the greater the argument that using department forces to perform the activity would facilitate the most effective utilization of local PennDOT crews.

IV. SUMMARY

The Contractibility Rating Analysis System (CONTRAS) is designed to be used as a tool to assist in the "make/buy" decision-making process for performing routine maintenance activities. In the Appendix, CONTRAS6 and CONTRAS7 provide examples on how to use the Contractibility Rating Analysis System to calculate the pertinent contracting potential for several activities. Normally, an activity with a higher Contracting Indicator figure would get a stronger preference to be performed by contract than an activity that calculates to a lower figure. When a maintenance organization's present contract/department force decisions for an activity (or activities) do not reflect the contract potential results calculated using CONTRAS, the organization should not necessarily alter its current work distribution plan. In that case, however, the organization should review their plans to insure they are cost effectively pursuing completion of their activities or that specific localized conditions control their decision.



Contractibility Factors

	Multiplier	Score	If
COST SAVINGS			
Unit Cost	5	0	+ % (State cost effective)
		1	0 % (or no score)
		2	−0.01 to −9.99 %
		3	>−9.99 % (Cont. cost effective)
IMPROVED DELIVERY OF SERVICE			
Labor Intensive	4	1	0 to 39.99 %
		2	40 to 59.99 %
		3	60 % or Greater
Time Criticality rel. Duration/Complet.	2	1	Time Limits Not Critical
		2	Time Limits Critical
Availability of Contractors	2	1	Low or none available
		2	Good availability
Volume of Work	3	1	$0 to $99,999
		2	$100,000 and up
Time Sensitivity for Planning	1	1	Not easily planned
		2	Easily planned
Special Eq./Skills or New Tech.	4	1	None Required
		2	Required
Inspection	1	1	High Inspection Required
		2	Low Inspection Required

CONTRAS3 5/96

DEFINITIONS

CONTRACTIBILITY FACTORS

Unit Cost

Project costs are related to (but not exact correlations to) the activity unit cost in MORIS or the item bid in CMS. There are generally miscellaneous costs in MORIS and separate bid items in CMS (like mobilization) that need to be considered. ***Possible score - 0, 1, 2 or 3.***

Labor Intensive

Determined relative to what percentage of the total cost of the project is attributed to its labor component. An activity that requires large crew sizes (or is labor intensive) may tie up in-house capability to perform routine maintenance or respond quickly to special situations. ***Possible score - 1, 2 or 3.***

Time Criticality Relative to Project Duration/Completion

Evaluate crucial time constraint factors such as the need to minimize the duration of traffic disruptions in high congestion areas, and/or a requirement to meet a fixed completion date. ***Possible score - 1 or 2.***

Availability of Contractors

The potential for contractor availability or competitive contract bidding environment is rated for the activity. ***Possible score - 1 or 2.***

Volume of Work

A high dollar volume activity is considered to have a greater potential to be performed by contract, because the commitment of in-house staff is minimized. ***Possible score - 1 or 2.***

Time Sensitivity for Planning

An activity that can be easily planned is considered to have a greater potential to be performed by contract, so that Department forces are free to respond to activities that are diffcult to plan. ***Possible score - 1 or 2.***

Special Equipment/ Skills or New Technology

An activity requiring equipment, skills, or new technology not currently possessed by Department forces (nor easily obtained) is considered to have a greater potential to be performed by contract. ***Possible score - 1 or 2.***

Inspection

An activity that does not require a high level of Department review prior to completion of a project is considered to have a greater potential to be performed by contract. ***Possible score - 1 or 2.***

EXAMPLES

EXAMPLE 1:
Calculating Contractibility Rating for Paving
(Using District 6-0 averages)

	Multiplier		Score		Points
Unit Cost	5	X	3 (-10%)	=	15
Labor Intensive	4	X	2 (40 to 59.99%)	=	8
Time Criticality	2	X	2 (Critical)	=	4
Avail. of Contractors	2	X	2 (Good)	=	4
Volume of Work	3	X	2 (+$100,000)	=	6
Time Sensitivity	1	X	2 (Easily planned)	=	2
Special Equip./Skills or New Technology	4	X	2 (Required)	=	8
Inspection	1	X	1 (High)	=	1
			Contractibility Rating	=	48

EXAMPLE 2:
Calculating Contractibility Rating for Mowing
(Using District 3-0 averages)

	Multiplier		Score		Points
Unit Cost	5	X	3 (-10%)	=	15
Labor Intensive	4	X	2 (40 to 59.99%)	=	8
Time Criticality	2	X	1 (Not Critical)	=	2
Avail. of Contractors	2	X	2 (Good)	=	4
Volume of Work	3	X	1 ($0 to $99,999)	=	3
Time Sensitivity	1	X	2 (Easily planned)	=	2
Special Equip./Skills or New Technology	4	X	1 (Not Required)	=	4
Inspection	1	X	2 (Low)	=	2
			Contractibility Rating	=	40

EXAMPLE 2a:
Example Showing Contractibility Rating for Mowing Recalculated where Contractor is Less than 10% Cost Effective

	Multiplier		Score		Points
Unit Cost	5	X	2 (-.01 to -9.99%)	=	10
Labor Intensive	4	X	2 (40 to 59.99%)	=	8
Time Criticality	2	X	1 (Not Critical)	=	2
Avail. of Contractors	2	X	2 (Good)	=	4
Volume of Work	3	X	1 ($0 to $99,999)	=	3
Time Sensitivity	1	X	2 (Easily planned)	=	2
Special Equip./Skills or New Technology	4	X	1 (Not Required)	=	4
Inspection	1	X	2 (Low)	=	2
			Contractibility Rating	=	35

EXAMPLE 3:
Calculating Contractibility Rating for Crack Sealing
(Using District 1-0 averages)

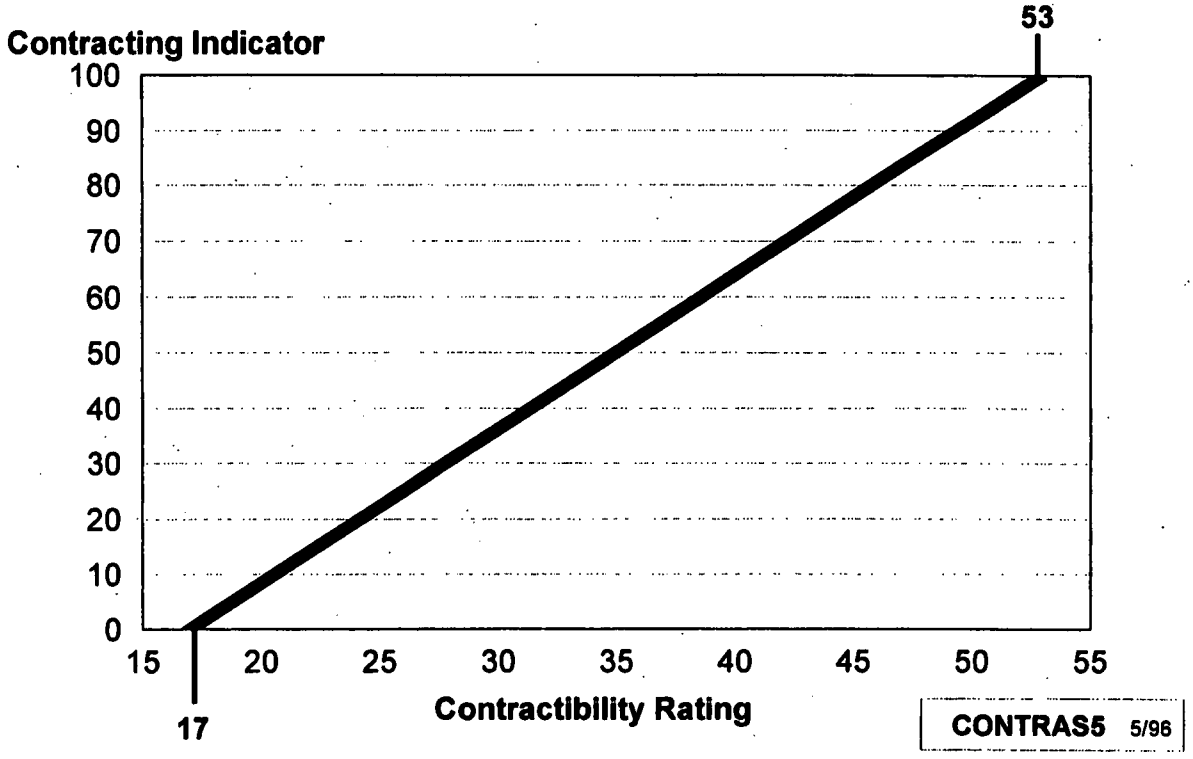
	Multiplier		Score		Points
Unit Cost	5	X	1 (0%)	=	5
Labor Intensive	4	X	2 (40 to 59.99%)	=	8
Time Criticality	2	X	1 (Not Critical)	=	2
Avail. of Contractors	2	X	2 (Good)	=	4
Volume of Work	3	X	2 (+$100,000)	=	6
Time Sensitivity	1	X	2 (Easily planned)	=	2
Special Equip./Skills or New Technology	4	X	1 (None Required)	=	4
Inspection	1	X	1 (High)	=	1
			Contractibility Rating	=	32

EXAMPLE 4:
Calculating Contractibility Rating for Shoulder Cutting
(Using District 8-0 averages)

	Multiplier		Score		Points
Unit Cost	5	X	0 (State cost eff.)	=	0
Labor Intensive	4	X	2 (40 to 59.99%)	=	8
Time Criticality	2	X	1 (Not Critical)	=	2
Avail. of Contractors	2	X	2 (Good)	=	4
Volume of Work	3	X	1 ($0 to $99,999)	=	3
Time Sensitivity	1	X	2 (Easily planned)	=	2
Special Equip./Skills or New Technology	4	X	1 (Not Required)	=	4
Inspection	1	X	2 (Low)	=	2
			Contractibility Rating	=	25

Routine Maintenance Contracting

Contract Potential



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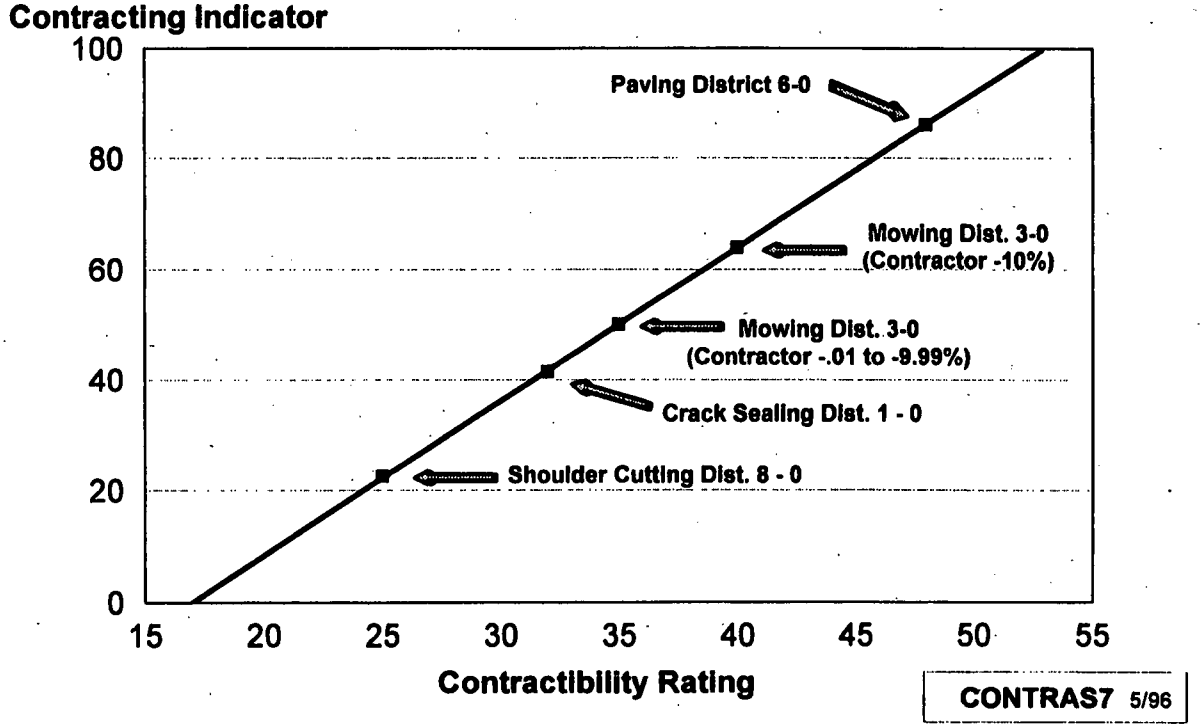
Routine Maintenance Contracting

Contract Potential



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APPENDIX F

Responses Regarding Outsourcing Trends

Listed below, by state, are the individual responses received in answer to the question:

Do current policies or legislation suggest that a greater amount of contracting out of highway services will occur in the future?

Alabama	Yes
Arizona	Yes
California	Yes. Pending legislation and recent Court decisions suggest that a greater amount of highway services may be contracted out in the future. Yes
Connecticut	In order to maintain a stable capital program, if in-house staff is reduced, more contracting of construction engineering services would be required. Yes No
Delaware	No
Florida	Yes
Georgia	Yes, due to the increased emphasis on privatization of state government. Yes, a commission on privatization has been appointed by the governor to study privatization of state government services. No Yes. Governor appoints Privatization Commission. Commission is reviewing all government services. Yes
Hawaii	Yes. Downsizing of government.
Idaho	Yes. We were recently given more funds, but also required to reduce staff. This will necessitate more contracting. Legislature recommends as much privatization as practical. Amount may rise slightly.
Iowa	Looking for the most cost-effective way of providing the "customer" services. Yes. Blue Ribbon Task force has been formed by governor to evaluate outsourcing of DOT functions. Legislation passed at Federal level recommends outsourcing more surveying and mapping for Federally funded projects. Probably approximately the same. Governor's Blue Ribbon Task force and recently announced Competitive Delivery of Government Services Initiative indicates a trend toward future increases in contracting out work.
Kentucky	Yes
Louisiana	Downsizing of staff and increase in workload due to the TIME projects. The TIME projects will increase the need for all types of real estate consultants including Appraisals, Negotiations, Title Abstract, and Relocation. The current trend is toward privatization in certain areas. This trend is expected to continue as funds are available. Yes. Principally dwindling manpower in the Department.
Maine	No
Maryland	Yes. Political climate dictates more privatization and continued downsizing of our organization. Yes. If SHA continues to downsize, it may be necessary to contract out more work. Yes, downsizing of state forces. Yes It seems to be going in that direction. Yes
Michigan	Yes Yes. Business people on 6-member Transportation Commission reduced MDOT work force.

Minnesota	No. Recent legislation requires contracting out to consultants be reduced to 95% of previous year. Outsourcing levels are currently being reviewed in Mn/DOT. Yes Current laws suggest that state agencies, in general, use existing expertise within state government first before contracting out. In reality, for the future budget, constraints and efficiency requirements may force the issue to contract out for services where a vendor can perform to "standards." There exists dialog and discussion suggesting this but policies and legislation actually are restricting rather than expanding contracting out. No No
Mississippi	It appears that the trend is to more contracting. With more manpower cuts, Yes. Downsizing will force more contracting.
Missouri	Probably, if government downsizing continues.
North Carolina	Possibly Legislative committee is studying privatization in all state government activities. Yes Yes Yes Administrative and political pressures indicate a continued move toward private enterprise. Not in Planning.
Nebraska	No. However, the size of the current and future programs, combined with loss of experience due to retirement of project managers and key inspection personnel may lead to additional contracting.
Nevada	No
New Jersey	Yes, due primarily to increased workload with reduced staff.
New Mexico	No
New York	Like most Departments, New York's DOT is down-sizing and as staff decreases consultant services will increase. Yes The policies of the current administration seem to support a greater level of contracting out, particularly relating to maintenance activities. Policies do but budget does not. Governor is moving to downsize state workforce. If the work is to get done it will have to be by contracting or privatization.
Oregon	There has been discussion at the legislative level. In particular, a bill was introduced which would have required government agencies to allow private contractors to bid on work a second agency was going to do through interagency agreement. The bill failed but on other aspects.
Pennsylvania	Complement controls, if they continue, suggest that contracting out will continue. With the complement controls in place, and the general trend toward outsourcing, "Yes" would be the answer. Probably Yes, but not because of legislation. Possibly, if it is economically worthwhile and/or if higher level of service can be provided by contracting out.
South Carolina	Yes
Utah	No
Virginia	In response to the Governor's Executive Order Number One and the Virginia Department of Transportation Secretary's strategic plan, VDOT is increasing its focus on the privatization of operations and services. "The Virginia Connections: Strategic Plan for Transportation," dated December 1994, states, in part, that "The provision of transportation assets and the delivery of transportation services will be enhanced through innovative financing techniques, such as public-private partnerships and privatization initiatives. Private sector solutions to meeting transportation needs must be encouraged. Opportunities to privatize governmental activities will be sought."
Washington	Yes. This trend towards contracting out seems destined to increase in the future. Indicators point toward less consulting by professional services, more contracting of field work beyond routine maintenance. Yes. Dept. will have a reduced work force and a considerable backlog of projects is building while we await funding.
West Virginia	No No Yes

APPENDIX G

Project Monitor Role Description from Arizona DOT's *Consultant Construction Manager Manual*

III. THE ROLE OF THE PROJECT MONITOR

Upon designation by the District Engineer, the Project Monitor should become familiar with the Consultant's contract requirements, including the construction contract plans and specifications. It must be emphasized that although the Project Monitor must be familiar with the construction contract in order to evaluate the Consultant's work, he/she must not initiate direct contact with the Contractor nor interfere with the Consultant's relationship with the Contractor. **The Project Monitor's role is to observe and ensure ADOT policy's and procedures are being followed and the plans and specifications are being adhered to.** The Project Monitor must make him/herself available to assist the Consultant in all times of need.

The Construction Group has found it very beneficial to schedule a pre-partnering meeting with the Consultant and Project Monitor at the Project Monitor's office, to review the project site and discuss project specifics. This meeting will generally be held some time during the cost negotiation process with the Consultant. The Construction Group and the Project Monitor should review the Consultant's Scope of Work at this time and discuss any issues that may be pertinent to the project.

The Project Monitor must contact the Consultant after cost negotiations are complete and provide the Consultant with any information or assistance needed for preconstruction activities. If the Consultant requests, the Project Monitor shall provide a copy of the ADOT Consultant Office Training Manual and the Project Office Handbook for use during the life of the project, and assist Consultant in the correct method of completing and submitting project documentation. Consultants are eligible for in-house ADOT training, and the Project Monitor may want to teach or suggest pertinent courses for Consultant personnel. In addition, several training manuals are available from ADOT that may be of value to the Consultant. The Project Monitor should check with the Human Resources Development Center, Technical Training Coordinator, to determine what training manuals are available. Section VI, References and Resources, lists pertinent available publications. Information assistance by the Project Monitor to the Consultant is positive assurance of a successful contract administration.

The Consultant will be required to administer the construction contract within the same ADOT guidelines and requirements used by Highway Division personnel. As such, the Project Monitor must provide the Consultant all necessary references for project use, such as Standard Drawings, Standard and Supplemental Specifications, pertinent local governmental agency standards, Construction Manual, ADOT Materials Testing Manual and Materials Policy and Procedure Directives Manual, Manual on Uniform Traffic Control Devices, ADOT Traffic Control Manual, and any other references noted in the Special Provisions. The Project Monitor should verify that Consultant has the latest updates of any references supplied.

The Project Monitor must provide a fully executed copy of the construction contract to the Consultant for their use, and the Project Monitor should retain a copy to use in properly advising and monitoring the Consultant.

The Project Monitor, as ADOT's liaison with the Consultant, should at the very beginning of the project establish guidelines and channels for timely paper flow of all project information. This will provide a direct communication link for all involved parties, while providing ADOT with a knowledgeable, on-site source of scrutiny, evaluation, comment, and judgment.

The Project Monitor should encourage the Consultant to contact and communicate with all other necessary ADOT Sections such as Materials Group, Regional Materials Engineer, Field Reports Branch, Bridge Group, Roadway Engineering Group, Local Government, Roadside Development Services, Traffic Group, etc. However, the Project Monitor should send a memo to all ADOT Groups and Sections introducing the Consultant. As emphasized previously, it is essential that the Project Monitor be kept continually informed of all contacts by the Consultant.

The Project Monitor need not be involved in the vast majority of verbal contacts (both within and outside of ADOT). He/she need only be kept informed of updated progress, similar to that of a District Engineer being kept informed of relevant project information by the Resident Engineer. The Consultant should be encouraged to include such information in the required weekly progress reports to ADOT. This has proven to be most beneficial on projects to date, and provides written documentation.

The Project Monitor's first significant effort begins with helping the Consultant prepare for the partnering workshop and preconstruction conference.

- *Partnering Workshop.* Partnering has been very successful in ADOT's construction program and has become an integral part of the way ADOT does business. The construction project administered by the Consultant will most likely be a Partnering Project. The Project Monitor must take the lead in this issue and work with the Consultant to ensure a Partnering Workshop is set up per ADOT guidelines and that all stakeholders are identified and invited to participate. Construction Bulletin No. 95-04 covers this issue and is included as Exhibit No. 6.

  The Partnering Workshop for a Consultant-administered project will be set up and held the same as any other ADOT construction project. The ADOT Partnering Section will assist the Project Monitor and Consultant in this procedure.

- *Preconstruction Conference.* A comprehensive preconstruction conference is very important to begin a construction project on the right foot. The Project Monitor can provide valuable assistance to the Consultant. The Project Monitor should help with the agenda and subject matter for more in-depth discussion. Chapter I of the Construction Manual provides additional information, and should be used by the Consultant.

It is not unusual to combine the partnering workshop and preconstruction conference; however, the partnering workshop should be held first.

The Project Monitor must attend the partnering workshop and preconstruction conference and most, if not all, other Consultant/Contractor meetings throughout the life of the project. His/her presence is always as an observer and nonparticipant unless the Consultant requests help and advice. This help and advice should be given only to the Consultant.

Frequent inspections of the project will be necessary. **Although the Project Monitor cannot direct the Contractor, the Project Monitor must ensure contract and specification compliance by both the Consultant and the Contractor.** On larger, more complex projects, the Project Monitor may need to be assigned an additional field representative to provide necessary technical assistance.

The Project Monitor must, by the very nature of this assignment, be very knowledgeable about the designated construction project, and likewise be very well versed in all areas of roadway construction engineering and contract administration. A Consultant without previous ADOT construction experience will encounter some difficulty getting the "feel" of project administration requirements. The Project Monitor will then need to assist by providing the proper training and guidance, within professional boundaries.

Although ECS, through the Construction Group, administers the Consultant's contract, the Project Monitor's expertise in ADOT construction contract administration is necessary to decide field issues. The Project Monitor's responsibility for general contract administration is explained in this Manual. Generally, all modifications to the Consultant's contract will pass through the Construction Group and ECS for their approval. Changes to key personnel, general survey staking methods, or approval of overtime may be approved by the Project Monitor only. The Project Monitor should contact the Construction Group to discuss any of these issues.

As an extension of ADOT, the Project Monitor must inform Consultant of changes to ADOT policies and procedures during the contract. The Project Monitor must forward any applicable updates and be aware of when these may materially effect the Consultant's contract. Any additional costs due to changes in ADOT's policies or procedures, incurred by the Consultant, will require a Contract Modification.

APPENDIX H

Characteristics of Successful Contracted Activities

The following comments from respondents in 21 states give an indication of some specific activities, as well as the characteristics of those activities, that apparently have provided beneficial results upon being outsourced. A few cautionary remarks regarding in-house staff benefits are also included.

Arizona	Activities requiring manpower but not intense management participation. Activities which are repetitive but not requiring high degree of professional involvement or review.
Georgia	Appraisal contracts, Engineering studies. Design work. Consultant design services are successful. Design services, plans. Environmental services. Management and skills training. Not enough experience yet (w/ Logo Program).
Hawaii	Landscape maintenance. Specialized work (bridge inspection and structural repairs).
Iowa	We've had difficulty with "Turnkey" projects. We try to contract for appraisals separately from acquisition and closings.
Louisiana	Appraisal consultants generally have more experience and credibility in court. Contract mowing and litter collection.
Maryland	Final design. Special types of projects requiring special expertise. Those which are performed by the better firms.
Michigan	Contractor quality control. Where good, clear direction is furnished.
Minnesota	Highly specialized areas of expertise not frequently needed. Those which are process oriented, and where expertise is available in meeting defined and recognized standards in the industry. Technical training for certification in specific areas can be measured easier than general training.
Missouri	Janitorial services improved and reduced the need for interviewing and hiring due to reduced turnover. Hot mix asphalt overlay program has worked well. Guardrail replacement, Concrete pavement repair, Bridge deck repair.
Nebraska	Yes. (No examples)
Nevada	Specialized design functions, training, building services.
New Jersey	Construction work and large maintenance contracts, obviously. Research projects that require special expertise not available in-house.
New Mexico	Specialized design activities on studies/investigations. Specialized construction activities (structural). Also bigger contracts.
New York	Large scale, complex, Equipment-intensive. Paving.
North Carolina	Contract operation of drawbridges. Staff designers may save time due to selection and review procedures; staff designers may save money on projects with hard-to-define scope of work. Small renovation/repair project may be more efficiently done in-house. Highway construction. Contract administration of highway construction projects. Design of high-tech facilities. Environmental services (ground water remediation)—specialization. Rebuilding parts and components—specialization.
Oregon	Larger more complicated work or specialty work—both for design or construction. Routine design and maintenance are more easily accomplished with staff.

Pennsylvania	MPO's/ LOD's are closest to regional transportation issues, problems and opportunities. Therefore, they are the most logical agencies to contract with to do regional planning and programming. Some specified (Technical services) evaluations that are straightforward and fairly simple can normally be delivered in a timely manner. More "vague" activities (Report writing/ studies) are not always what the Department is looking for. Pesticide spraying. Specialized tree crews.
Utah	Materials contracts are more successful than service contracts, because of the effort required to monitor performance.
Virginia	Contracted services for activities for which the Dept. has little or no expertise, or for which the Dept. does not have required special equipment, are generally viewed as more successful.
Washington	Some contracts provide greater benefit than others, but all that are completed contribute to program completion. Highly specialized work that requires expensive specialty equipment (e.g., servicing building chillers).
West Virginia	Construction and materials approvals.

APPENDIX I

Timeline for Public-Private Partnerships *(33)*

B. Timeline For Development of A Public-Private Partnership

In reviewing the development of several innovatively financed projects, the project team found that certain developmental stages reoccurred. As a result, a time line for a "typical" project was identified, marking the key stages of development and the major activities which fall within each stage. Sponsors embarking on a partnership venture for highway development should find it useful to review this time line and plan for the activities indicated.

The typical life-cycle stages associated with the delivery of a highway facility through public private partnership are project genesis and preliminary feasibility analysis; enabling legislation, selection of project and project development structure, pre-construction development, financing, construction, and operation. The following pages chart these key stages in project delivery and provide a description of activities associated with these stages.

STAGE	*DESCRIPTION OF ACTIVITY*	*RISK*
	Project Genesis	
Enabling Legislation	State establishes legislation enabling the use of private funding sources for public infrastructure projects. May include provisions for private concessions and the number of projects.	Specific proposals at high risk Specific proposals at high risk but require minor financial commitment.
Policaial Coalitions	State reviews political environment to determine current level of support and to provide assurances to potential private partners that may reduce political and legal risks. This may include measures to limit tort liability and assurances of fair compensation in the event of State expropriation.	Same high risks with increased, but still minor, financial commitments.
Preliminary Selection	State often begins preliminary selection of specific systems, corridors or routes for improvement under a public-private partnership. This pre-selection may include pre-engineering and broad-based feasibility studies that set criteria for project design and construction.	Same high risks requiring ever increasing financial commitments by private sponsor.
	Project Selection	
Engineering	Prepare construction and right-of-way documents to include support of environmental and financing activities. Structure documents in accordance with owner/review agency requirements to include a reduced level of detail for a design and build program, if applicable.	Survivor still at high risk and requiring significant financial commitment. Risk borne primarily by private developer/contractor.
Permitting	Complete the required environmental process and secure regulatory approval of the project to include mitigation measures. Prepare permit applications and secure approval of construction activities. Challenges to permits often persist throughout the construction phase.	High risk with low financial commitments. Risk borne by private developer and government, depending on financing mix.
Right-of-Way	Negotiate and purchase, or transfer, ownership rights of way for the project. This activity includes temporary and permanent easements for construction and maintenance.	High risk with more significate public commitment.

STAGE	DESCRIPTION OF ACTIVITY	RISK
Revenue Forecasts	Perform traffic and earnings forecasts and revenue determinations from other sources such as public funding, taxing district, or equity participation consistent with the project financing plan. Prepare detailed cost estimates of capital, operating, and maintenance expenditures.	High risk with degree of risk dependent on whether project is planned on previously existing or speculative corridor.
Business Plan	Develop a business plan summarizing operating and development organizations, costs, business structure and implementation plan for the project. Identify key resources and critical milestones for activity completion and decision making. Identify potential rates of return for financial sponsors.	High risk requiring active participation of public planning agencies. Financial commitments rising.
	Financing	
Resource Identification	Determine potential sources to meet the needs estimated in the financial plan. Screen to the sources that are real and available and determine the level of participation that is desired from each.	High risk mitigated to the extent that government funding available.
Solicitation	Present the business/financial plan to funding entities. Market securities as appropriate. Develop financial terms and conditions with other funding sources, such as pension funds, banks and equity participants.	High risk to both private and public partners. Degree of public financial commitment helps spread substantial private risks.
Closing	Execute agreements and close on financing.	Continuation of other finance-related risks.
	Construction	
Bidding/ Awarding	Depending on project procurement process, either bid for the work to be performed or award the contract to a pre-selected participant. Award of contract and contract terms must reflect schedule, scope, and rewards (penalizes) for early (late) delivery.	High risk depending on nature of bidding process determined in enabling legislation.
Construction Management	Secure CM services or expand developer's staff to assure quality and performance.	Medium risk borne evenly by public and private partner. Financial commitment at peak levels.
Acceptance	In accordance with regulatory, permits, or other agreements, provide for as built review and acceptance for public use prior to opening.	Medium risk with continued high financial commitment. Degree of private risk dependent on public support.
	Operation	
Operation Planning	Prior to opening, staff and train personnel for daily operation, inspection and maintenance. If business plan anticipates contracted maintenance, solicit and secure appropriate maintenance agreements.	Low risk but substantial risk with decreased financial requirements depending on adequacy of system engineering.
Operation	Traffic begins and revenues are realized. Toll collection, accident clearance, maintenance, cost control, and other processes must be set in motion.	Low risk, however, some initial uncertainty associated with public acceptance. Income stream may allow refinancing.

APPENDIX J

AASHTO Partnership Summary *(30)*

Part 3. Privately Owned Transportation Facilities and Public/Private or State/Local Partnerships.

A. Are there any transportation facilities in use or under consideration which are privately owned or are the result of a public/private partnership or joint venture? If yes, please list and describe the nature of the private and public transportation?

State	Response
Alaska	Alaska has an industrial development agency that finances business infrastructure including transportation systems. The agency was first funded with state dollars but has developed a portfolio of revenue bonds that now provide funding for other projects. It has one major transportation system in its portfolio (the Johnnie Mountain System) that is used to haul ore from the Red Dog Mine to tide water. It was developed as a joint venture with the mining company. The other major transportation system developed with a joint public/private partnership is the support road for the Trans-Alaskan Pipeline (TAP), the "Dalton Highway." The Dalton Highway was built by the oil companies when they constructed the TAP with government agencies providing engineering expertise, right-of-way acquisition assistance and funding for major bridges. After construction of TAPS, the road became a public facility. A third example in Alaska is the Klondike Highway. The Klondike Highway was an existing seasonal facility that needed to be upgraded so that it could be used to haul ore concentrate to tide water. The transport company wishing to do the hauling financed retrofitting bridges to accommodate heavy loads in exchange for a maintenance agreement that kept the road open year around.
Arizona	Several interchanges have been constructed under public/private joint funding. An interim roadway which will be converted to full freeway in the future (Estrelle Freeway) has been constructed on ROW donated by land owners. This arrangement saved the state ROW costs and allowed acceleration of the interim roadway.
Arkansas	Yes, the Department is working with a developer to construct an interchange connection which is on the local area's long range transportation plan.
California	The AB 680 projects are all public/private partnerships which are being financed by the private sector without the use of federal or state funds.
Colorado	E-470 Toll Road is managed by a private authority and is financed through bonds which are supported by fees collected on a regional basis.
Connecticut	Most general aviation airports in Connecticut are privately owned and operated. At state-owned airports, all general aviation and cargo facilities are developed, operated and maintained with private funds. Privately developed facilities at state-owned airports ultimately become the property of the State.
Florida	Southern Connector Extension: Osceola County, the Transportation Development Group Trust and the Florida Department of Transportation participated in the project. Private Transportation Facilities: The Florida Department of Transportation currently is evaluating a private transportation facility proposal which, if approved, will result in a public/private partnership.
Illinois	45 privately owned public use airports.

State	Response
Indiana	There are road projects which have been undertaken in recent years to support economic development agreements entered into by the State. These public/private partnerships involve a private entity making a significant capital investment and the State investing in the necessary infrastructure improvements to enable the private capital to realize it's required rate of return.
Kansas	The Kansas Turnpike Authority is a quasi-public body.
Michigan	Detroit - Windsor Tunnel Toll Facility: Jointly owned by the city of Detroit and Windsor, Ontario; Ambassador Bridge - Privately owned toll facility connecting Windsor, Ontario and Detroit Michigan
Minnesota	Couple of very minor bridges to North Dakota and Canada.
Missouri	A not-for-profit transportation corporation was formed under the supervision of the Missouri Highway and Transportation Commission. The corporation will issue toll revenue bonds to pay for a project. When the bonds have been paid, the project will be transferred to the state.
Nevada	There have been a number of projects which are the result of public/private partnership. The nature of the partnerships have been financial participation. None of the projects are privately owned.
New Hampshire	It is hoped that Manchester Airport Access Road will involve some type of public/private venture, e.g. Developer could donate right-of-way and state build the road.
New Jersey	Various transportation facilities in New Jersey are controlled by Authorities, quasi-public entities which are permitted to seek private bond funding. The facilities are: the New Jersey Turnpike, the Garden State Parkway, and the New Jersey Expressway. In addition, most of the bridges connecting New Jersey Expressway with Pennsylvania, New Jersey with New York, and New Jersey with Delaware are operated by Authorities.
North Carolina	Yes, the following list of "private participation in highway projects" are required to be state-maintained upon completion. Biltmore Square Associates in Buncombe County, Copperfield, Inc. in Cabarus County, Interstate Combined Ventaures in Cabarrus County, NCNB National Bank of NC in Wake County, North Hills Properties\Silverton, Inc. in Wake County, Southern Parkway in Durham\Wake Counties, and Western Blvd. Extension in Jacksonville in Onslow
Ohio	ODOT has had some small projects that have included private dollars. These have been for interchanges associated with economic development.
Oregon	Portland International Airport but this is nothing new or innovative.
Pennsylvania	The proposed Airport Alternate Road (also known as the Pittsburgh Airport Multimodal Corridor) is envisioned as a 4-land expressway between the Montour Run Interchange of the Parkway West and the Ohio River Blvd. Extension in Pittsburgh (8 miles). It is a joint venture between Allegheny County and PennDOT. The County is providing the state match for a Marketing and Developmental Study focusing on potential revenues and land development opportunities. It is hoped that sufficient developmental opportunities can be identified to attract private developers/investors and foster the formation of public/private partnerships to generate added financing for the project and the corridor.

State	Response
Tennessee	We have partnered with private developers at regional shopping centers whereby new interchanges were built to handle the generated traffic. The construction of the new interchanges was funded 100% by private sources and the Interchange ownership was transferred to the State for future maintenance and operation. Example: Cool Springs Interchange, Williamson County, and Hickory Hollow Interchange, Davidson County.
Virginia	Public/Private partnership for Route 28 Transportation Improvement District located adjacent to Dulles Airport in Northern Virginia and the Dulles Greenway privatization project in Northern Virginia.

Part 3. Privately Owned Transportation Facilities and Public/Private or State/Local Partnerships.

B. Are there any transportation facilities in use or under consideration which are the result of state/local governmental partnerships or joint ventures? If yes, please list and describe the nature of the joint participation in the project.

State	Response
Alabama	Bridge Replacement and STP Funds are allocated to counties on an annual basis that require the county to provide local matching funds.
Alaska	State/local partnerships in Alaska generally follow the same pattern: the state builds the facility and the local government agrees to operate and maintain it after completion.
Arizona	The freeway system in the Phoenix area is financed by a county-wide sales tax. Freeways are constructed by the Department and are state highways. Several other projects have been developed under joint sponsorship.
California	The Transportation Corridor Agencies (TCA's) in Orange County have formed a governmental partnership with the state.
Colorado	Powers Blvd. is a 36 mile bypass around the east side of Colorado Springs, CO. The project includes Federal and State funds in addition to General Obligation bonds from the City Local Improvement District Bonds, and private funds include right-of-way dedication.
Connecticut	Each airport has only one legal sponsor. The State is responsible for pursuing federal grant money for capital improvements for its airports. Municipal airports have both federal and state grants available for their capital improvements.
Florida	Southern Connector Extension: Osceola County, the Transportation Development Group Trust and the Florida Department of Transportation participated in the project. The Department will construct and own the project while the other partners contribute land and funds worth $87 million. Seminole Expressway 1 and the Veterans Expressway: These projects were initiated by the Seminole County and Tampa-Hillsborough County Expressway Authorities with Toll Facilities Revolving Trust Fund loans but became Florida Department of Transportation Turnpike projects. I-4 Crosstown Connector: Located in Tampa, the project is being developed by the Department and Tampa-Hillsborough County Expressway Authority. Seminole Expressway II: This project is under development by the Seminole County Expressway Authority utilizing advances from the Toll Facilities Revolving Trust Fund.
Hawaii	Intergovernmental agreement for transportation planning, preliminary engineering and final design for a primary roadway within a development area.

State	Response
Illinois	Illinois Valley Airport (Peru) 50% State; 50% Local Sponsor
Indiana	Yes, currently, the State is considering constructing a five mile road to provide access to a new steel plant under construction. The current terms of the agreement have the State paying for the initial construction of the roadway, then relinquishing it to the County for on-going maintenance.
Kansas	The State of Kansas operates a local assistance program. All projects have state and local funding and are generally small projects.
Kentucky	Have many state/local projects, especially small bridge replacements, where cost sharing is required. Small bridge program: state designs, state pays for structure, locals let to construction and pay for approach work. Other program where two local governments pay for 50% of highway/bridge project and state pays 50%.
Louisiana	No. Prohibited by law.
Minnesota	It happens on a regular basis. Minn DOT working with the local agencies and adjacent states to fund, build, and maintain various roads and bridges.
Missouri	The City of O'Fallon, Missouri, has also organized a transportation corporation to issue bonds to finance the acceleration of a planned state highway project. The Commission will later pay the cost of construction and right-of-way to the corporation. The interest and costs of issuance of the bonds will be paid from a local transportation sales tax.
Nebraska	A private Trails West Museum has been proposed that would require an Interstate highway interchange. The promoters of the museum will pay for any required construction.
Nevada	There have been a number of projects which are the result of public/private partnership. The nature of the partnerships have been financial participation but none of the projects are privately owned.
New York	Three transportation development districts (TDD) in towns of Greenburgh, Ulster and Smithtown built. Three other TDD's are planned in the towns of Batavia, Henrietta and Southeast that will provide the local share for State Highway improvements.
Ohio	See Transportation Improvement District and Panhandle Rail Project.
Oregon	The development of Portland's Westside light rail transit system is a joint effort of the State. Portland's metropolitan planning organization (Metro), and Portland's transit district (Tri-Met). Partners are providing funding and technical resources to complete the project. The development of the South/North transit project is envisioned to be a joint venture between the States of Oregon and Washington, impacted local communities and transit districts. Oregon and Washington are working with the province of British Columbia to develop high speed rail service between Vancouver, BC and Eugene, OR. Each is providing funding and technical resources to develop high speed passenger rail service in the Pacific Northwest High-Speed Rail Corridor.

State	Response
Pennsylvania	Pennsylvania has entered into formal and informal partnerships with local and private sources to stretch available dollars. Some examples are (1) PA 60, Moon Twp., Thorn Run Rd. Interchange, Allegheny Co., $8.6 million, completed 10/91. Joint participation with Department of Defense and Moon Transportation Authority. (2) Park Road Extension (4-lane expressway from Warren Street to the Outer Bypass), Berks Co., the county along with several local governments and businesses have committed to providing $11.4 million of the $82.6 million needed to complete the project. (3) Warren St. Bypass Extension (4-lane expressway from US422 to Grings Hill Road, Spring Township) and the Lancaster Pike reconstruction (reconstruction to 4-lanes from Grings Hill Road to the Lancaster County Line). Berks County, along with several local governments and businesses, have committed to providing $4.8 million of the $133.7 million needed to complete these two projects. (4) Robinson Town Center Interchange, Fayette County, $19.4 million. Joint participation with the North Fayette Transportation and Business Improvement Authority and Metro Developers.
Tennessee	The State has two programs available for state/local government partnerships. One is the Local Interstate Connector Program and the other is State Industrial Access Road Program. Under the LIC Program, state and local governments share the cost on a 50/50 basis for local roads providing access to the Interstate System. Under the SJA Program, the State constructs the road to new industries and the local government provides the right-of-way. Under both programs, the local government is responsible for maintaining the roads.
Texas	Joint venture with City of Laredo. Many TxDOT projects in cities are participating in right-of-way and curb and gutter.
Utah	Yes, Joint venture between Utah and Arizona for a completed "super" Port of Entry. Also, a joint venture between UDOT, Salt lake City and Salt Lake County for a region traffic management system in the Salt Lake County Area including, update and revitalization of traffic signals and transportation management center.
Vermont	Only projects that routinely have state/local funding requirements.
Virginia	There are a number under discussion. The Oak Grove Connector is a current example. VDOT works with a number of cities and counties on joint funded projects.

Part 3. Privately Owned Transportation Facilities and Public/Private or State/Local Partnerships.

C. Does your state have a law authorizing the building, operation and/or management of privately-owned transportation facilities, or is such a law under consideration? If yes, please describe. Please attach a copy of the law if possible.

State	Response
Arizona	Chapter 26, Arizona Statutes, (Transportation Project Privatization) allows for four demonstration projects.
California	Privately financed demonstration projects listed in Part 2 were authorized in 1989 by Assembly Bill 680.
Florida	Private Transportation Facilities, S. 334.30, Florida Statutes, and Chapter 14-107, FAC.
Illinois	Consideration will be given as part of Chicago - St. Louis high speed rail project.
Iowa	No specific authorizing law, but also no law which specifically prohibits.

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