United States Government Accountability Office

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Report to the Chairman, Committee on Transportation and Infrastructure, House of Representatives

January 2008

FEDERAL-AID HIGHWAYS

Increased Reliance on Contractors Can Pose Oversight Challenges for Federal and State Officials

GAO-08-198

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Highlights

Highlights of GAO-08-198, a report to the Chairman, Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

Pressure on state and local governments to deliver highway projects and services, and limits on the ability of state departments of transportation (state DOT) to increase staff levels have led those departments to contract out a variety of highway activities to the private sector. As requested, this report addresses (1) recent trends in the contracting of state highway activities, (2) factors that influence state highway departments' contracting decisions, (3) how state highway departments ensure the protection of the public interest when work is contracted out, and (4) the Federal Highway Administrations' (FHWA) role in ensuring that states protect the public interest. To complete this work, GAO reviewed federal guidelines, state auditor reports, and other relevant literature; conducted a 50-state survey; and interviewed officials from 10 selected state highway departments, industry officials, and FHWA officials.

What GAO Recommends

GAO recommends that the Secretary of Transportation work with FHWA division offices in targeting their oversight activities to give appropriate consideration to identified areas of risk related to the increased use of consultants and to develop performance measures to help evaluate the effectiveness of state controls. The Department of Transportation did not comment on GAO's recommendation but provided technical clarifications, which GAO incorporated as appropriate.

To view the full product, including the scope and methodology, click on GAO-08-198. For more information, contact JayEtta Z. Hecker at (202) 512-2834 or heckerj@gao.gov.

What GAO Found

State DOTs have increased the amount and type of highway activities they contract out to consultants and contractors. State DOTs are also giving consultants and contractors more responsibility for ensuring quality in highway projects, including using consultants to perform construction engineering and inspection activities as well as quality assurance activities. Many state officials reported that they expect the amount of contracted highway activities to level off over the next 5 years, due to factors such as uncertain highway program funding levels.

State DOTs indicated that the most important factor in their decision to contract out highway activities is the need to access the manpower and expertise necessary to ensure the timely delivery of their highway program, given in-house resource constraints. Officials said that they must contract out work to keep up with their highway programs. Of the 50 departments that completed GAO's survey, 38 indicated that they have experienced constant or declining staffing levels over the past 5 years. While state DOTs consider cost issues when making contracting decisions, cost savings are rarely the deciding factor in contracting decisions, and none of the 10 departments that GAO interviewed had a formal process in place for systematically assessing costs and benefits before entering into contracts.

State DOT officials that GAO interviewed believe that they have sufficient tools and procedures in place to select, monitor, and oversee contractors to ensure that the public interest is protected. However, implementation of these mechanisms is not consistent across states, and state auditors reported weaknesses in several states. State DOTs also face additional challenges in conducting adequate oversight and monitoring, given current trends in the use of consultants and contractors. For example, while state employees are always ultimately responsible for highway project acceptance, they are increasingly further removed from the day-to-day project oversight. Officials from all 10 state DOTs that GAO interviewed said that current trends may lead to an erosion of in-house expertise that could affect the state DOTs' ability to adequately oversee the work of contractors and consultants in the long term.

Because states have broad latitude in implementing the federal-aid highway program, FHWA has a limited role in states' use of consultants and contractors. Typically, FHWA's focus is on ensuring that state DOTs are in compliance with federal regulations when contracting out, such as ensuring that federal bidding requirements are met. FHWA has conducted both local and national reviews that have also identified various risks related to the increased use of consultants, including weaknesses in state quality assurance programs and an increased potential for conflicts of interest. While FHWA has identified these risks, it has not comprehensively assessed how, if at all, it needs to adjust its oversight efforts to protect the public interest, given current trends in the use of consultants and contractors.

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Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
C.F.R.	*Code of Federal Regulations*
FHWA	Federal Highway Administration
state DOT	state department of transportation
U.S.C.	*United States Code*

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United States Government Accountability Office
Washington, DC 20548

January 8, 2008

The Honorable James L. Oberstar
Chairman
Committee on Transportation and Infrastructure
House of Representatives

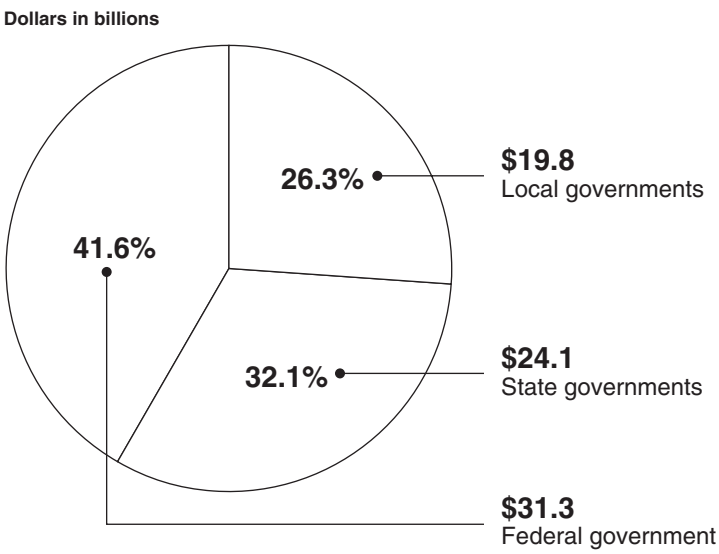
Dear Mr. Chairman:

The nation's economic vitality and the quality of life of its citizens depend significantly on an efficient transportation network. For the past several decades, population, income levels, and economic activity have risen considerably, and with the increases in these areas have come considerable increases in travel demand. Transportation infrastructure has not kept pace with these increases. According to the Department of Transportation, investment by all levels of government remains well below the estimated amount needed to maintain the condition of the nation's transportation infrastructure, and to fund improvements to the performance of the network. In 2005, of the over $75 billion expended for capital outlays and maintenance for highways, the federal government accounted for about 40 percent and state and local governments accounted for about 60 percent (see fig. 1).

As demands on the transportation system grow, states and localities are looking for alternatives to direct government provision of transportation infrastructure and services. Consistent with longer-term trends in privatization of public services, states and localities have looked to increased private sector participation in delivering highway infrastructure and services. A 2003 survey by the National Cooperative Highway Research Program found that the use of contractors and consultants had continued to increase and had also expanded into activities previously done principally by public agencies, such as activities related to inspection and quality assurance of highway facilities and activities related to obtaining right-of-way for highway infrastructure projects.[1]

[1]Thomas R. Warne, *NCHRP Synthesis 313: State DOT Outsourcing and Private-Sector Utilization, A Synthesis of Highway Practice* (Washington, D.C.: National Cooperative Highway Research Program, 2003), for the Transportation Research Board of the National Academies.

Figure 1: Total Capital Spending on Highways, by Level of Government, Fiscal Year 2005



Source: Federal Highway Administration.

Proponents of privatization have long suggested that using private sector, market-based incentives offers the potential advantages of obtaining infrastructure or services faster than if provided solely by the public sector, at a potentially lower cost. However, some critics have raised concerns that the increased use of consultants and contractors contributes to a loss of accountability, a decline in the skill levels and experience of public sector staff, lower quality projects, and the inefficient use of public funds.

To assist Congress as it assesses the future of the federal surface transportation and highway programs, we studied the extent of contracting by state departments of transportation (state DOT). This report addresses (1) the recent trends in the contracting of state highway activities; (2) the factors that influence state DOTs in deciding whether to contract out activities and the extent to which state DOTs assess costs and benefits when making such decisions; (3) how state DOTs protect the public interest when work is contracted out, particularly when consultants and contractors are given substantial responsibility for project and service quality and delivery; and (4) the Federal Highway Administration's (FHWA) role in ensuring that states protect the public interest.

To address these issues, we reviewed relevant literature and survey data to identify general trends in contracting and to establish a general baseline for comparison with current levels of contracting. We also reviewed the literature to identify available information regarding the costs and benefits of contracting out highway activities versus performing them with in-house staff. We sent an inquiry to state auditing agencies and received and reviewed state auditor reports from 11 states that addressed issues relating to state DOTs' use of consultants and contractors. We also conducted a Web-based survey of all 50 state DOTs to determine the extent to which state DOTs contract for services across 7 categories of highway activities.[2] We surveyed state DOTs to determine (1) the factors they say are leading them to contract out activities or to keep work in-house and (2) information about potential future trends in contracting. The survey also gathered data on state DOTs' use of a variety of different contract types and techniques, such as design-build contracts.[3] We received a 100 percent response to our survey. Appendix III contains tables summarizing the state DOTs' responses. We conducted a correlation analysis to identify factors—such as state economic and demographic measures—that may be associated with the level of contracting reported in the survey. We also interviewed state DOT officials in 10 different states to gather information on their perceptions of the costs and benefits of contracting, on the ways in which state DOTs define and seek to protect the public interest, and on how state DOTs' use of consultants and contractors is evolving. In selecting state DOTs to interview, we used a nongeneralizable sample, rather than performing random sampling. We chose this approach to ensure that the sample set included state DOTs with a range of outsourcing experiences and practices. We interviewed industry stakeholders from 6 different organizations knowledgeable about the outsourcing of highway activities to obtain additional perspectives on the costs and benefits of contracting and on how state DOTs seek to protect the public interest. Finally, we interviewed FHWA officials at the national level, as well as at 10 division offices[4] corresponding to the state DOTs selected for interviews, to obtain information on FHWA's policies,

[2]The highway activities included preliminary engineering, design, construction engineering and inspection, federal-aid eligible preventive maintenance, routine maintenance activities not eligible for federal-aid program funding, ongoing operations, and right-of-way.

[3]A design-build contract is a method of project delivery where the design-builder forges a single contract with the state transportation agency to provide for architectural and engineering design and construction services.

[4]FHWA has 52 division offices—1 in each state, the District of Columbia, and Puerto Rico.

guidance, and oversight of state contracting practices and on the role FHWA plays in ensuring that states protect the public interest. We reviewed program and process reviews from FHWA's national and division offices to identify key areas of oversight focus and key findings that have been reached in such reviews regarding states' contracting and quality assurance procedures.

For this report, we limited the scope of our review to contracts where consultants or contractors are paid to provide a service related to highway infrastructure. Although essentially contractual relationships, we did not include public-private partnerships—where a private firm takes effective ownership of a facility and assumes control over it, usually for an extended period of time—in the scope of our work. Another GAO review focusing specifically on public-private partnerships related to highway infrastructure was under way concurrently with this review, and a final report will be issued later in January 2008.[5] We conducted this performance audit from November 2006 through January 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I contains more information on our objectives, scope, and methodology.

Results in Brief

State DOTs have increased the amount of highway activities they contract out to consultants and contractors. More than half of the 50 departments we surveyed reported that they had increased the amount of preliminary engineering, design, right-of-way, and construction engineering and inspection activities they had contracted out over the past 5 years. Fewer departments responded that they had increased the contracting out of operations and maintenance activities in this period. We also found from our survey and interviews that many departments are increasingly giving consultants and contractors more responsibility in ensuring the quality and delivery of highway infrastructure and services. For example, departments have increased the use of consultants to perform inspection

[5]GAO, *Highway Public-Private Partnerships: Potential Benefits and Risks Suggest Actions Are Needed to Protect Public and National Interests*, GAO-08-44 (Washington, D.C.: Jan. 18, 2008).

activities, and the use of consultants as project managers to oversee and manage day-to-day activities on highway projects. Our survey also indicated that some states have broadened the types of contracts and contracting techniques they use, such as using design-build or lane rental contracts,[6] although the use of these techniques does not appear to be widespread across the states. The majority of departments reported in our survey that they expect the amount of contracted highway activities to level off over the next 5 years for all of the activities included in our study. State highway department officials attributed this leveling off to uncertainty about whether funding and staffing levels would change in the near future.

State DOT officials indicated that the most important factor in their decision to contract out highway activities is the need to access the manpower and expertise necessary to ensure the timely delivery of highway infrastructure and services, given in-house resource constraints. In our survey, state DOTs listed "lack of in-house staff" as "very important" or "important" in their decision to contract out work more than any other factor for all 7 of the highway activities included in the study. Over the last several years, demand for highway infrastructure and services has continued to grow, while at the same time, the majority of the departments have experienced constant or declining staffing levels. In our survey, 38 of the 50 departments indicated that they employ either the same or fewer staff than they did 5 years ago. While officials we interviewed said that costs are considered in contracting decisions, our survey results show that for almost all of the state DOTs, "to obtain cost savings" was not a key driver in the trend toward the increased use of contracting. In fact, our interviews with state DOT officials indicated that contracting out work is perceived to be somewhat more expensive than performing work in-house, particularly for engineering services. Several studies have tried to formally compare the costs of in-house performed work with consultant and contractor performed work. Methodological issues and other limitations make it difficult to conclude that the use of consultants and contractors is more or less expensive than using public employees over the long term. In addition to staffing and cost issues, other considerations, such as the desire to maintain in-house expertise, can play a role in a state

[6]Under the lane rental concept, a provision for a rental fee assessment is included in the contract. The lane rental fee is based on the estimated cost of delay or inconvenience to the road user during the rental period. The fee is assessed for the time that the contractor occupies or obstructs part of the roadway and is deducted from the monthly progress payments.

DOT's decision of whether to contract out highway activities or perform the work with in-house staff.

In general, the state DOT officials we interviewed believe that they have sufficient tools and procedures to select, monitor, and oversee contractors to ensure that the public interest is protected, but that they face additional challenges in protecting the public interest, given current contracting trends. These officials highlighted various controls they employ throughout the consultant and contractor procurement process, including such things as prequalifying consultants, regularly monitoring the work of consultants and contractors, and including assessments of consultants and contractors in determinations for future contracts. States also have highway design standards, materials standards, and quality control and assurance guidelines that are applicable on all projects, regardless of who performs the work. However, implementation of these mechanisms is not consistent across states. Several state auditor reports we reviewed found weaknesses in state DOTs' procurement and oversight practices, such as the absence of aggressive price negotiations, failure to consistently assess the quality of consultant and contractor work, and failure to fully comply with quality assurance procedures. Such weaknesses can lead to lower-quality highway construction and the inefficient use of public funds. Other trends in contracting pose additional challenges to state DOTs in conducting adequate oversight and monitoring. While state employees are always ultimately responsible for highway project acceptance, they are increasingly further removed from the day-to-day oversight of the project and are more frequently overseeing a number of highway projects simultaneously, instead of just one project. Also, while officials from state DOTs we interviewed believe that their departments were equipped to adequately oversee consultants and contractors, all of the officials indicated that the decreasing number of experienced staff, combined with their departments' increased reliance on contractors and consultants, may erode in-house expertise at their departments, which could affect their ability to adequately oversee the work of contractors and consultants over the long term. Finally, with consultants and contractors involved in almost all highway activities, from design to final inspection, FHWA has found that more potential exists for conflicts of interest and for independence issues to arise.

Given that state DOTs are primarily responsible for delivering highway infrastructure and services, FHWA has a limited role in determining how consultants and contractors should be used on highway projects. Generally, FHWA's role is to ensure that state DOTs have used consultants and contractors in compliance with applicable federal laws and

regulations. FHWA primarily performs oversight of states' use of consultants through direct oversight over a limited number of projects and through its risk assessment process in which division offices work with their state DOTs to identify and address systematic vulnerabilities in the DOTs' processes and programs. Through such risk assessments, several division offices have identified issues related to the use of consultants and contractors and conducted process reviews in response. In addition to these reviews of individual states, FHWA has also conducted national reviews that involve issues related to the use of consultants and contractors that have also found areas of risk to the federal-aid highway program. In particular, one review found that the trend toward using more consultants in quality assurance creates additional possibilities for conflicts of interest, and that state DOTs' quality assurance programs are often not in full compliance with federal regulations. FHWA is developing a plan to address the issues found in this review. While FHWA has identified risks associated with the use of consultants and contractors, the agency has not comprehensively assessed how, if at all, it needs to adjust its oversight efforts to protect the public interest, given current trends in the use of consultants and contractors.

To address the risk factors and oversight challenges associated with the increasing use of consultants and contractors, we are recommending that the Secretary of Transportation direct the Administrator of the Federal Highway Administration, in the context of its ongoing activities related to quality assurance programs and risk management, to work with the division offices to (1) give appropriate consideration to the identified areas of risk related to the increased use of consultants and contractors as division offices work to target their oversight activities and (2) develop and implement performance measures to better assess the effectiveness of state DOTs' controls related to the use of consultants and contractors to better ensure that the public interest is protected.

We provided the Department of Transportation, including FHWA, with a draft of this report. DOT officials provided technical clarifications, which we incorporated as appropriate.

Background

FHWA assists states' efforts in building and maintaining highways through the federal-aid highway program. The agency distributes highway funds to the states through annual apportionments established by statutory formulas and by allocating discretionary grants. The states may obligate funds for construction, reconstruction, and improvement of highways and bridges on eligible federal-aid highway routes and for other purposes

authorized in law once FHWA has apportioned the funds to the states. About 1 million of the nation's 4 million miles of roads are eligible for federal aid.

As a condition of receiving federal funds, states must adhere to federal laws and regulations. In particular, states must ensure that their highway program activities comply with title 23 of the *United States Code* (U.S.C.) and title 23 of the *Code of Federal Regulations* (C.F.R.), which contain provisions relating to the federal-aid highway program. FHWA has issued a number of regulations to implement and carry out these provisions. These provisions in title 23 relate specifically to states' use of consultants and contractors. For example, states must comply with the Disadvantaged Business Enterprise Program requirements of 49 C.F.R. Part 26, which requires that a certain percentage of contracts be awarded to small businesses owned and controlled by socially and economically disadvantaged individuals, including minority and women-owned businesses. Contracts for engineering and design services that are directly related to a construction project and use federal-aid highway funding must be awarded in the same manner as a contract for engineering and design services under certain provisions of the Brooks Architect-Engineers Act,[7] which establishes a qualifications-based selection process in which contracts for architects and engineers are negotiated on the basis of demonstrated competence and qualification for the type of professional services required at a fair and reasonable price. While state DOTs are subject to many federal laws and regulations regarding contracting, they are not required to follow the *Federal Acquisition Regulation* when contracting for federally funded highway activities, except for the cost principles in 48 C.F.R. Part 31. Other specific federal provisions relating to state DOTs' contracting practices are summarized in table 1.

[7]The Brooks Architect-Engineers Act (Pub. L. No. 92-582) established the procurement process by which the federal government selects architects and engineers for design contracts.

Table 1: Rules and Regulations That Pertain to States' Contracting Practices

Provision	Source	Detail
Bidding requirements for letting of contracts	23 U.S.C. § 112	In all cases where the construction is to be performed by the state transportation department or under its supervision, a request for submission of bids shall be made by advertisement unless some other method is approved by the Secretary. The Secretary shall require such plans and specifications and such methods of bidding as shall be effective in securing competition. Construction of each project shall be performed by contract awarded by competitive bidding, unless the State transportation department demonstrates, to the satisfaction of the Secretary, that some other method is more cost effective or that an emergency exists. Contracts for the construction of each project shall be awarded only on the basis of the lowest responsive bid submitted by a bidder meeting established criteria of responsibility. Each contract for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services shall be awarded in the same manner as a contract for architectural and engineering services is negotiated under chapter 11 of title 40 or equivalent State qualifications-based requirements.
Suitably equipped and organized transportation department	23 U.S.C. § 302(a)	Any State desiring to avail itself of the provisions of title 23 U.S.C. shall have a State transportation department which shall have adequate powers, and be suitably equipped and organized to discharge to the satisfaction of the Secretary the duties required by this title. In meeting the provisions of this subsection, a State may engage to the extent necessary or desirable, the services of private engineering firms. FHWA expects the State to provide full-time State representatives to be in responsible charge of "core functions" or "inherently governmental functions" of the State government that directly relate to the Title 23 duties for administering a Federal-aid project or program.
Conflict of interest	23 C.F.R. § 1.33	No official or employee of a State or any other governmental instrumentality who is authorized in his official capacity to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving any contract or subcontract in connection with a project shall have, directly or indirectly, any financial or other personal interest in any such contract or subcontract. No engineer, attorney, appraiser, inspector or other person performing services for a State or a governmental instrumentality in connection with a project shall have, directly or indirectly, a financial or other personal interest, other than his employment or retention by a State or other governmental instrumentality, in any contract or subcontract in connection with such project. No officer or employee of such person retained by a State or other governmental instrumentality shall have, directly or indirectly, any financial or other personal interest in any real property acquired for a project unless such interest is openly disclosed upon the public records of the State DOT and of such other governmental instrumentality, and such officer, employee or person has not participated in such acquisition for and in behalf of the State. It shall be the responsibility of the State to enforce the requirements of this section.

Provision	Source	Detail
Administration of design and engineering services contracts related to highway construction	23 C.F.R. Part 172	This part prescribes policies and procedures for the administration of engineering and design related service contracts intended to ensure that a qualified consultant is obtained through an equitable selection process, that prescribed work is properly accomplished in a timely manner, and at fair and reasonable cost. Recipients of federal funds shall ensure that their subrecipients comply with this part. Also contains provision that state DOTs must receive permission from FHWA before hiring a consultant to act in a management capacity on behalf of the department.
State oversight of highway construction	23 C.F.R. 635.105(b)	Although the state may employ a consultant to provide construction engineering services, such as inspection or survey work on a project, the state shall provide a full-time employed state engineer to be in responsible charge of the project.
Design-build contracting	23 C.F.R. Part 636	This part covers FHWA's policies and procedures for approving design-build projects financed with federal-aid highway funds.
Quality assurance procedures for construction	23 C.F.R. Part 637	This part prescribes policies, procedures, and guidelines to assure the quality of materials and construction in all Federal-aid highway projects on the National Highway System. Contractor test results are allowed to be used in the project acceptance decision of the state; independent verification testing is required to ensure that contractor testing conforms to applicable standards.

Sources: *United States Code* and *Code of Federal Regulations*.

For projects using federal-aid funding, FHWA has also promulgated regulations that establish design, construction, and materials standards for highway projects that are on the National Highway System.[8] In general, states' laws, regulations, directives, safety standards, design standards, and construction standards apply to highway projects that are off of the National Highway System.

FHWA has authority to oversee any project that receives federal-aid highway funds. However, the agency has increasingly delegated responsibility for oversight to state DOTs since the passage of the Intermodal Surface Transportation Equity Act in 1991. Oversight roles and responsibilities are outlined in stewardship agreements that each FHWA division office executes with its respective state DOT. These stewardship agreements outline when FHWA will have project-level oversight, or what is known as "full oversight" over a project, and when that responsibility will be delegated to states. Stewardship agreements vary in how full

[8]On projects that are not located on the interstate system but are part of the National Highway System, the states may assume responsibility for overseeing the design and construction of projects, unless the state or FHWA determines that this responsibility is not appropriate.

oversight is determined. A stewardship agreement may indicate that full oversight occurs on only "high-profile" projects, which will be agreed upon by the state and the division office, or there may be a specific dollar threshold, such as all interstate projects that are over $1 million. Generally speaking, FHWA has project-level oversight for a relatively limited number of federal-aid projects. Recently, FHWA developed guidance on the development of stewardship agreements and encouraged its division offices to revise their agreements on the basis of this guidance to achieve more consistency throughout the agency. Among other things, the guidance encourages the division offices to use risk management principles to determine where to focus their stewardship activities. The guidance also recommends that division offices develop performance measures to better track the health of the federal-aid highway program in their states. However, the guidance gives state DOTs and division offices broad flexibility in determining how risks should be assessed and how performance should be measured.

In addition to having oversight over some specific projects, FHWA division offices oversee state DOTs through reviews of the departments' programs and processes. Some of these reviews occur annually, and others are undertaken at the discretion of the division office on the basis of areas where there may be increasing risk to the highway program. These reviews are meant to ensure that states have adequate controls in place to effectively manage federally assisted projects and will generally result in recommendations and corrective actions for the state DOTs.

Over the past several years, GAO has expressed concerns about FHWA's oversight role. For example, we reported in 2005 that FHWA lacked a comprehensive approach in its oversight efforts.[9] We found that even though FHWA had made progress in improving its oversight efforts, such as establishing performance goals and outcome measures to limit cost growth and schedule slippage on projects, FHWA had not linked these efforts to its day-to-day activities and was not using them to identify problems and target oversight. More generally, we have also raised concerns about federal transportation policy. For example, we have reported that federal transportation funding is not linked to system performance; that the federal government does not have direct control over the vast majority of the activities that it funds; and that highway grant

[9]GAO, *Federal-Aid Highways: FHWA Needs a Comprehensive Approach to Improving Project Oversight*, GAO-05-173 (Washington, D.C.: Jan. 31, 2005).

funds are apportioned to state and local governments by formula, without regard to the needs, performance, quality, or level of effort of recipients.[10] Transportation and other experts recently told us that the nation's transportation policy has lost focus, and that the nation's overall transportation goals need to be better defined and linked to performance measures that evaluate what the respective policies and programs actually accomplish.[11]

States Have Increased the Contracting Out of Highway Activities, and Consultants and Contractors Increasingly Have Substantial Responsibility for Ensuring Quality and Delivery of Highway Projects

State DOTs have increased the amount and type of highway activities that they have contracted out to consultants and contractors over the past 5 years. In particular, state DOTs have increasingly contracted out preliminary engineering, design, right-of-way, and construction engineering and inspection activities. We also found that state DOTs have increasingly given consultants and contractors more responsibility for project quality through a growing trend to contract out construction inspection and engineering activities. Some state DOTs have used broader contracting types and techniques that give additional responsibility to consultants and contractors. For example, some state DOTs have used consultants to serve on their behalf as project managers or program managers to oversee and manage day-to-day activities on highway projects.

[10]GAO, *Highlights of a Forum Convened by the Comptroller General of the United States: Transforming Transportation Policy for the 21st Century*, GAO-07-1210SP (Washington, D.C.: Sept. 19, 2007).

[11]GAO-07-1210SP.

States Have Increasingly Contracted Out Highway Activities

On the basis of our survey (see sidebar) and discussions with state officials, we found that states have increased the extent to which they contract out some types of highway activities to consultants and contractors (see fig. 2). Our survey results indicated that over the past 5 years, more than half the states have increased the amount of preliminary engineering, design, and right-of-way activities as well as construction engineering and inspection activities they have contracted out to third parties. A fewer number of states have increased contracting out of maintenance and operations activities.

Highway Activities Included in the GAO Survey

Preliminary Engineering: Includes activities such as surveying and mapping, locations studies, traffic studies, planning, and environmental impact analysis.

Design: Includes activities such as preliminary and final design work.

Construction Engineering and Inspection: Includes activities such as inspections, materials testing, construction management, and schedule analysis.

Federal-Aid Eligible Preventive Maintenance: Includes activities such as pavement preservation, safety improvements, and seismic retrofits.

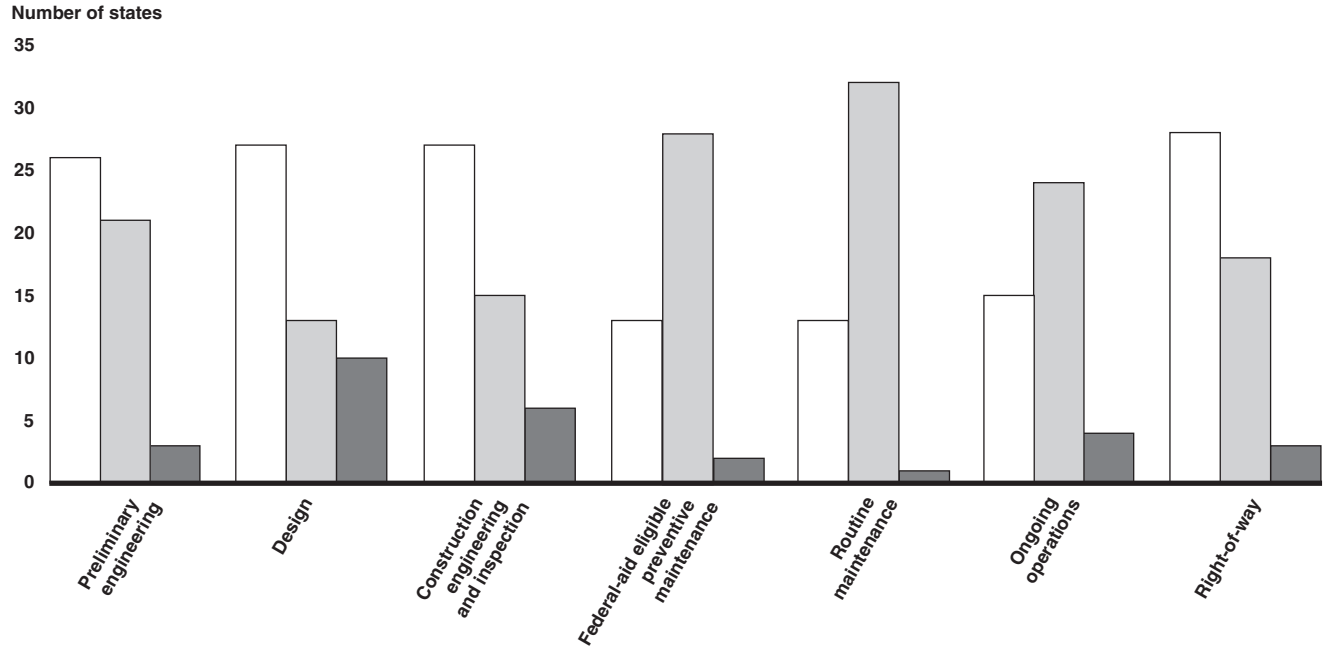
Routine Maintenance Not Eligible For Federal-Aid Program Funding: Includes activities such as snow plowing, litter removal, and mowing.

Ongoing Operations: Includes activities such as intelligent transportation systems management, toll collections, and signal and sign systems.

Right-of-Way: Includes activities such as land appraisals, land purchase negotiations, and assistance programs for individuals and businesses displaced by highway projects.

Note: We did not include construction activities in our survey because state DOTs have contracted out virtually all highway construction work for over 60 years.

Figure 2: Number of State DOTs That Reported Increasing, Decreasing, or Maintaining the Same Level of Contracting Out over the past 5 Years



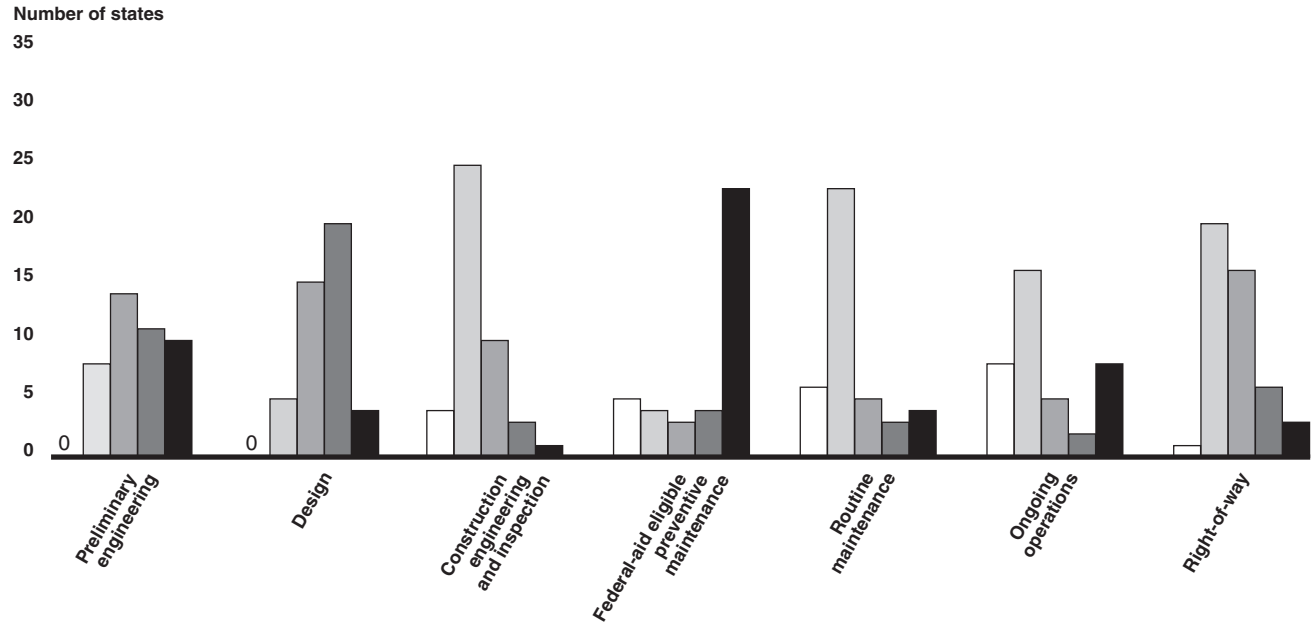
	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way
Number of states responding	50	50	48	43	46	43	49

Source: GAO survey results.

Several state DOT officials told us during our discussions that their departments had increased their use of consultants in different areas. For example, Illinois highway department officials told us that the state has contracted out preliminary engineering and design activities at various levels for 30 years, but that the state has only recently begun to increase its use of consultants to perform right-of-way activities. In addition, according to Georgia highway department officials, they now contract out 65 to 75 percent of their design work compared with very little design work being contracted out only a few years ago.

The level of contracting varies considerably across the activities we surveyed (see fig. 3). For example, 23 highway departments reported that they were contracting out more than 75 percent of federal-aid eligible preventive maintenance activities, while the amount of routine maintenance activities that state DOTs contract out is still relatively low—nearly half of the states reported that they contracted out less than 25 percent of these activities.

Figure 3: Number of State DOTs at Various Levels of Contracting Out



Number of states responding	43	44	43	39	41	39	46

Percentage of work contracted out

- 0%
- 1-25%
- 26-50%
- 51-75%
- 76-100%

Source: GAO survey results.

Many States Have Increased the Use of Consultants and Contractors for Inspection Activities

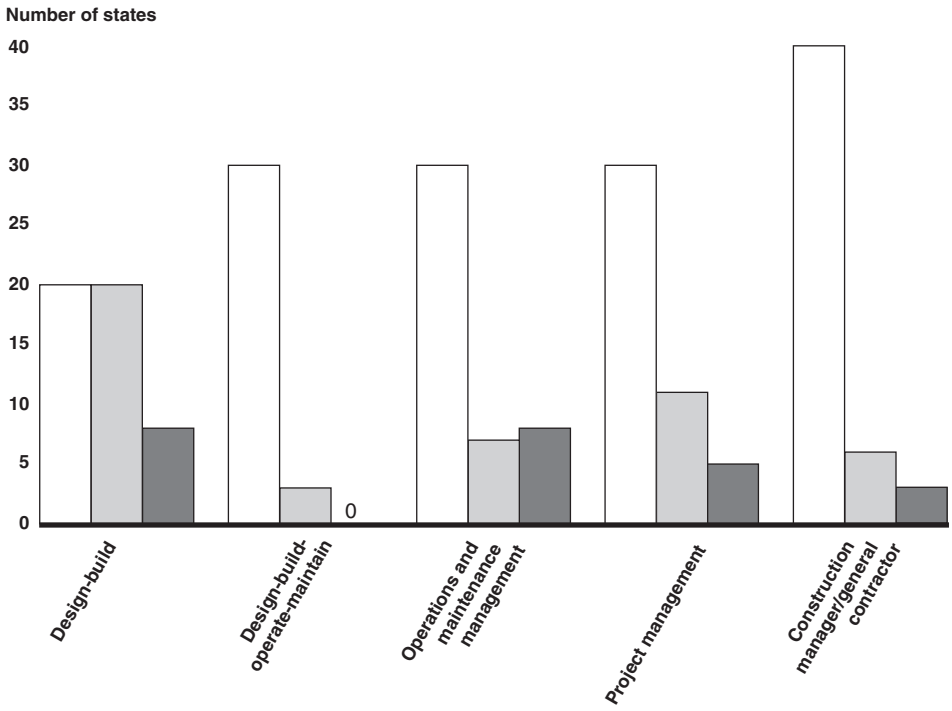
Officials from 27 of the 50 states responding to our survey indicated that their states had increased the contracting out of construction engineering and inspection activities over the past 5 years, although half the states report contracting out 25 percent or less of this work. In our interviews, several states indicated that they have recently had to increase their use of consultants for construction inspection activities. For example, the South Carolina DOT began to increase its use of consultants to perform construction engineering and inspection work in 2000. Department officials estimated that they will contract out about 10 percent of construction engineering and inspection work next year. Prior to 2000, the South Carolina DOT only contracted out construction inspection and engineering work on certain large, complex projects. Maryland State Highway Administration officials also said that they have been giving what have been traditionally in-house construction engineering and inspection activities to consultants, contracting out about 60 percent of these activities.

Officials from at least 3 state DOTs we interviewed indicated that they would prefer to keep construction inspection and engineering activities in-house to retain greater control over the quality of contracted work. For example, Illinois highway department officials said that they always assign an Illinois highway department engineer to oversee the consultant because they do not like to have consultants oversee other contractors and consultants, but that they need to contract out inspection activity for projects that require expertise they do not have in-house. The Maryland State Highway Administration officials also said that they would prefer to retain the construction engineering and inspection activities in-house, but they have been unable to hire a sufficient number of staff. According to Utah DOT officials, the agency has been able to avoid contracting out any construction engineering and inspection activities so far, but they would likely contract out such activities in the future if workload burdens on in-house highway department staff continue to increase.

Some State DOTs Have Broadened the Types of Contracts and Contracting Techniques That They Use

Some state DOTs have used certain types of contracts where contractors assume more responsibility and risk for project delivery and day-to-day highway project oversight. For example, design-build contracts allow contractors to be involved in both the design and the construction of a highway project, and project management contracts (1) can assign additional oversight responsibilities to contractors or consultants and (2) can result in contractors overseeing other contractors. Figure 4 shows the number of states using these types of contracts and the frequency with which they use them.

Figure 4: Number of State DOTs Using Different Types of Contracts over the past 5 Years



Source: GAO survey results.

As figure 4 shows, more than half of the state DOTs have used a design-build approach at least once, and 20 state DOTs have not let any design-build contracts over the past 5 years. Our survey also indicates that many state DOTs still have constraints on their ability to use design-build contracting. Fifteen state DOTs reported that they do not have authority to enter into design-build contracts, and an additional 10 state DOTs reported that they have only limited design-build authority. Few states have experience with other contracting methods asked about in our survey. Five states reported that they had used project managers for more than 10 contracts, and 3 states reported having used construction

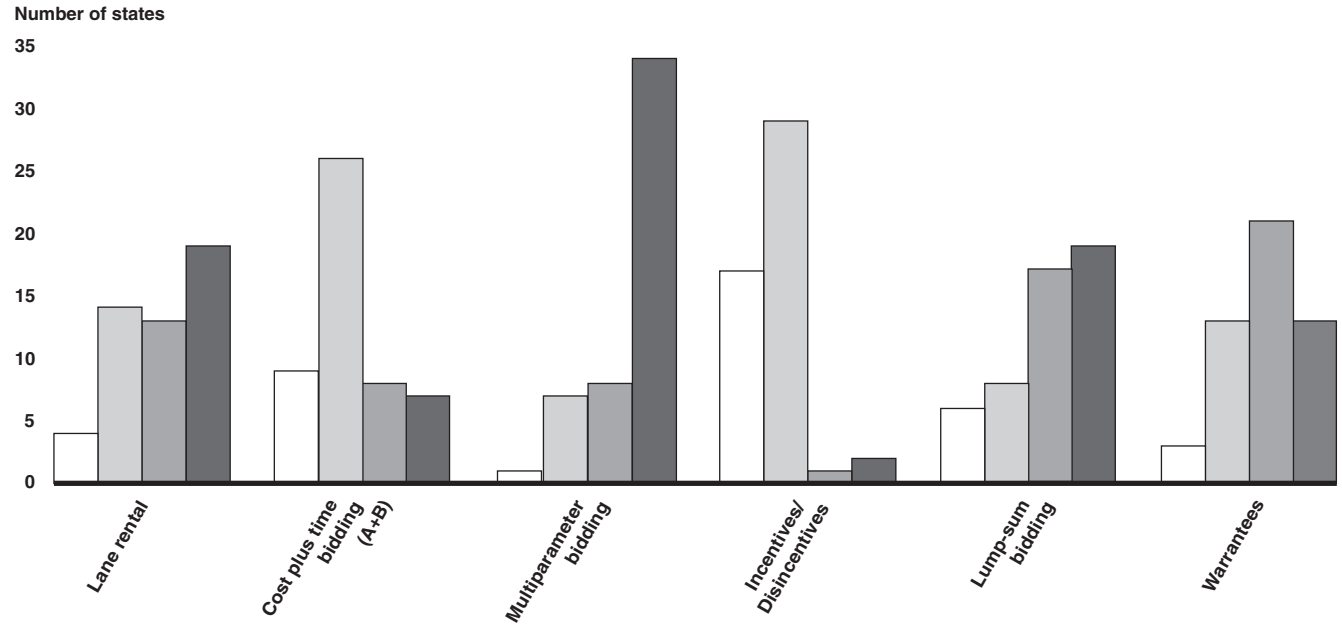
managers/general contractors more than 10 times to oversee and manage the day-to-day activities of a project.

Our survey also asked about a variety of other contracting techniques that state DOTs may use in an effort to help minimize construction time and cost, such as cost plus time bidding (A+B),[12] incentive and disincentive contracts,[13] and lane rental contracts. Almost two thirds of the states indicated that they used more than one of these contracting techniques at least occasionally. Of the contracting techniques included in the survey, states reported using incentives and disincentives and cost plus time bidding most often over the past 5 years (see fig. 5).

[12]The contract award is based on a combination of the traditional bid for the contract items (the "A" component) and the bidder's estimated total number of calendar days required for project completion (the "B" component).

[13]State highway departments may use incentive/disincentive provisions to motivate the contractor to complete the work on or ahead of schedule.

Figure 5: States' Use of Various Contracting Techniques



Number of states responding	50	50	50	49	50	50

Response

- Frequently
- Occasionally
- Rarely
- Not at all

Source: GAO survey results.

While some states have used these contracting techniques in their highway projects, many states reported that they did not use them very often. For example, only 10 states reported using more than 1 technique frequently. Of these states, only 4 reported using more than 3 of these techniques frequently. Two states reported using these tools either rarely or not at all.

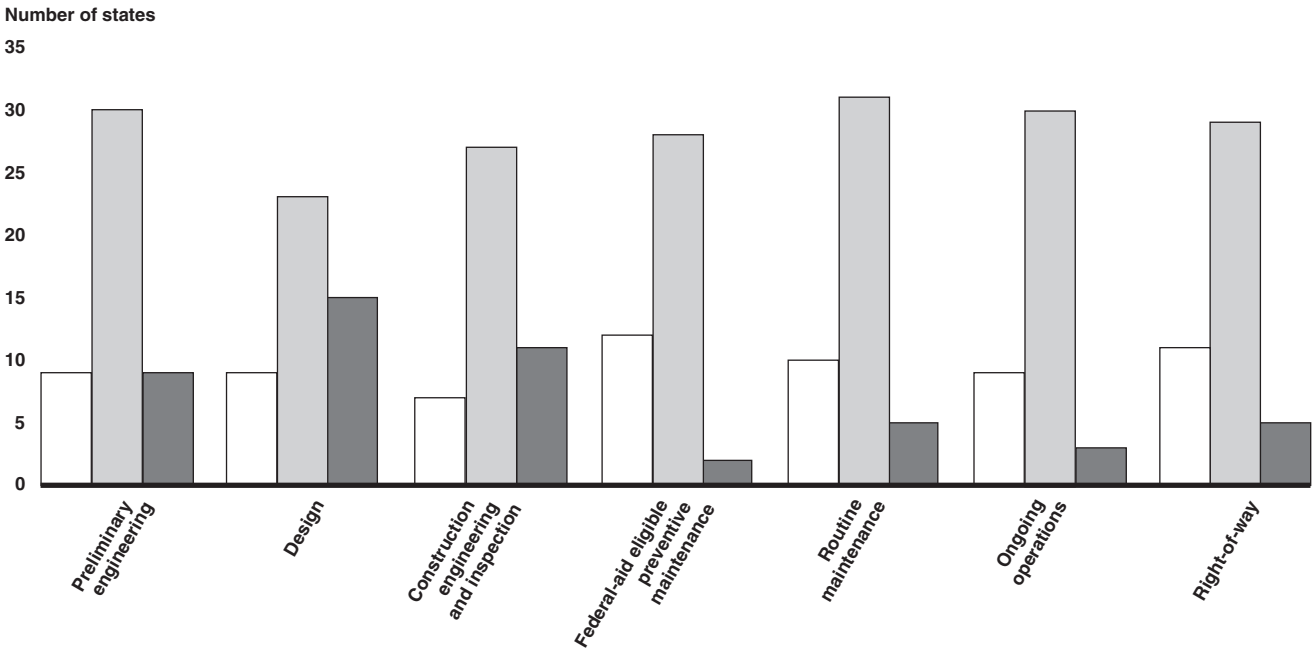
While our survey results do not indicate widespread use of these different types of contracts and contracting techniques, these results do not indicate that the use of these contracts is not an important or growing trend in state contracting. State officials we interviewed told us that many of these types of contracts, which are relatively new to some state DOTs,

are actively being considered and their use is likely to grow in the future. In addition, some techniques are more suited to projects in congested areas—such as lane rental contracts—and some states may have fewer such projects than others. Other contract types, such as design-build contracts, are often used for projects that are large and complex in scope, which may be relatively rare in some states.

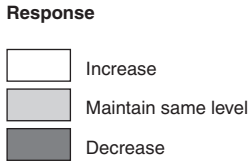
Most States Do Not Expect the Level of Contracting to Increase over the Next 5 Years

While many state DOTs have increased their contracting out of various activities over the past 5 years, officials at many highway departments anticipate a slowing of this trend. As figure 6 shows, most state DOTs reported that they expect to maintain their current level of contracting over the next 5 years. For some activities, a number of states even expect to see declines in their level of contracting. For example, 15 state DOTs reported that they expect their contracting of design activities to decrease over the next 5 years. State DOT officials responded in the survey that their expectations for their contracting levels over the next 5 years are based on their expectations for highway program funding levels, legislative considerations, anticipated workload, and staffing levels. For example, the Oregon DOT officials stated in our survey that they expect their funding levels for highway projects to greatly decline by 2010, thereby reducing their need for consultants. However, the department noted that if they are able to secure new funding, they anticipate continuing at their current level of consultant use, which is at a historical peak for the department.

Figure 6: Number of States Anticipating Increasing, Decreasing, or Maintaining the Same Level of Contracting Out over the Next 5 Years



	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way
Number of states responding	48	47	45	42	46	42	45



Source: GAO survey results.

Some states anticipated growth in their contracting for certain activities. For example, Pennsylvania and Utah DOT officials responded that they believe their state will increase contracting out work to consultants and contractors for all seven categories of highway activities. In addition, another state official indicated that its state DOT expects to increase its contracting out of federal-aid eligible preventive maintenance work in the next 5 years due to an anticipated shift in its program to focus on system preservation, rather than capital projects.

State DOTs Indicate That Lack of In-house Staff and Expertise Are the Most Important Drivers in States' Contracting Decisions

State DOTs indicate that the most important factor in state DOTs' decision to contract out highway activities is the need to access the manpower and expertise necessary to ensure the timely delivery of their highway program, given in-house resource constraints. While state DOTs consider cost issues when making contracting decisions, cost savings are rarely the deciding factor in contracting decisions, and no state we interviewed regularly performs formal assessments of costs and benefits before deciding whether to contract out work. Several studies have attempted to compare the costs of in-house and contracted work, although limitations in the studies' methodology make it difficult to conclude that the use of consultants and contractors is more or less expensive than using public employees over the long term. In addition to staffing and cost issues, there are other considerations, such as the desire to maintain in-house expertise that can play a role in a state DOT's decision of whether to contract out highway activities.

Need to Supplement In-house Staff and Access Expertise Are the Major Drivers in the Decision to Contract Out Work

In our survey, state DOTs listed "lack of in-house staff" as "very important" or "important" in their decision to contract out work more than any other factor for all seven of the highway activities included in the study, as shown in table 2. Furthermore, all of the highway department officials that we interviewed said that they do not have the in-house staff resources available to deliver their program in a timely manner, so they must contract out work to deliver projects and services. For example, Illinois DOT officials said that at this point, they rely on consultants to fulfill the department's work demands.

Table 2: Number of State DOTs That Reported Factors as "Important" or "Very Important" in Decisions to Contract Out Activities

	Number of state DOTs, by highway activity						
Factor	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way activities
Lack of in-house staff	45	44	39	34	35	31	44
To maintain flexibility or manage variations in department workload	36	36	32	19	25	17	38
To access specialized skills or equipment	31	30	19	27	23	25	26
To increase speed of completion or to meet specific time frames	35	32	12	21	19	14	39
To meet federal or state legislative mandates, legal requirements, or policy initiatives	20	18	20	17	9	13	15
To identify innovative approaches or new techniques	10	14	4	11	4	11	5
To obtain cost savings	3	3	1	10	9	3	3

Source: GAO survey results.

In recent years, state DOTs have experienced a substantial growth in funding for their highway programs, without a commensurate increase in staffing levels. Results from our survey show that the majority of state DOTs have experienced constant or declining in-house staffing levels. State DOTs indicated that staff reductions occurred most frequently in the areas of design, construction engineering and inspection, and maintenance, as shown in table 3.

Table 3: Number of State DOTs That Reported Changes in Professional Staff over the past 5 Years

	Number of state DOTs, by staff change			
Type of professional and technical staff	Increased	Decreased	Stayed the same	No basis to judge
Planning and environment	16	13	18	1
Design (roadway, bridges, and traffic engineering)	4	28	17	0
Construction engineering and inspections (inspections, materials testing, and scheduling)	9	20	20	0
Operations (ongoing Intelligent Transportation Systems, toll collection, and signal and sign systems)	11	8	23	6
Maintenance	6	20	20	1
Right-of-way and utilities	7	15	24	2
Other nonadministrative	2	10	23	12
Overall professional and technical staff	12	21	17	0

Source: GAO survey results.

Of the 50 states that completed the survey, only 12 highway departments stated that they employ more professional and technical highway staff than they did in the past 5 years. The remainder of the highway departments said that their workforces have either stayed the same or decreased over the last 5 years.

Analysis of Census of Governments data also illustrated these trends in staffing at state DOTs. From 1992 to 2005, employment at state DOTs across the country declined by a little over 0.5 percent annually.[14] At the same time, state spending on highways increased by 0.2 percent annually, in real (inflation-adjusted) terms. These trends have resulted in an increase in the amount of highway spending per employee at state DOTs, with each state DOT employee on average having to "manage" a larger amount of his or her state's program. Overall, across the country, state DOT inflation-adjusted expenditures per employee have grown by 0.75 percent annually from 1992 to 2005.

Officials at every state DOT we interviewed also acknowledged challenges in delivering highway infrastructure and services demanded, given their in-house staffing situations. Several of the officials cited budgetary issues and political pressure to reduce the size of government as constraints on

[14]There was no Census of Governments employee survey in 1996; therefore, there are no employment data for that year.

their ability to hire additional in-house staff. For example, Illinois DOT officials, whose staff has been cut nearly in half since the 1970s, stated that these staff reductions have been primarily linked to budget issues, such as those associated with the state's public employee pensions. In South Carolina, the legislature has not substantially changed the highway department's staffing levels despite the department's increased program size. Consequently, department officials stated that there is more work to do than the department can handle with its in-house staff alone.

Officials from several state DOTs also mentioned that market conditions, including a lack of qualified engineers and the higher salaries paid in the private sector, limit their ability to hire and retain qualified personnel, even when they have the budget authority to do so. In Georgia, DOT officials said that the department is often engaged in bidding wars with private firms for prospective employees, and that they simply do not have the ability to offer equivalent compensation.

In addition to supplementing ongoing shortages of in-house staff, many state DOTs viewed contracting as a valuable strategy for managing short-term workload fluctuations. For example, Louisiana Department of Transportation and Development officials said that contracting is beneficial because it provides them with added flexibility and allows them to respond more rapidly to spikes in their highway program than if they had to bring new in-house staff on board. Once work slows, contracting also allows the state DOTs to draw down their workforce without having to lay off in-house employees. In our survey, state DOTs listed the desire to "maintain flexibility or manage variations in department workload" as "very important" or "important" more frequently overall than any other factor except "lack of in-house staff" in their decision to contract out work.

In addition to increasing their overall level of manpower, state DOTs also frequently contract out work to access specialized skills or expertise they may not have in-house, according to our survey results and interviews with state highway officials. For example, the Pennsylvania DOT does not always have the specialized skills in-house to do certain geotechnical analyses and environmental impact assessments, so this work is contracted out. Several state DOTs also indicated that they tend to use consultants on complex projects that require more specific expertise. For example, Illinois DOT officials told us that they typically use consultants for larger, more complex projects that generally will have a higher associated dollar amount due to the need for specialized expertise. In addition, Louisiana Department of Transportation and Development

officials said that they usually hire consultants to design the more complex and larger projects due to a decrease in design staff as well as in-house expertise. Maryland State Highway Administration officials also indicated that staff reductions in their agency have had a disproportionate effect on positions requiring more experience and has led to the agency using a greater proportion of consultants on large projects.

Cost Savings Are Not a Major Driver in Decisions to Contract Out Work

Cost savings do not appear to be an important driver in the trend toward the increased contracting out of highway activities. Of the seven factors listed in the survey that might potentially lead a state DOT to decide to contract out an activity, "to obtain cost savings" was listed as "very important" or "important" the least number of times of any of the factors, across six of the seven highway activities studied. Furthermore, "to obtain cost savings" was listed by states as "of little importance" or "of no importance" the most times of any factor for five of the seven highway activities studied, as table 4 shows. During our interviews, no state DOT official cited cost savings as a primary reason for their departments' increased use of consultants and contractors in delivering their highway program. The Georgia DOT initially attempted to perform some cost-benefit analyses when the department was going through a surge in its contracting out work; however, the department abandoned these efforts after it became apparent that the results of the analyses did not matter since the department needed to contract out the work regardless.

Table 4: Number of State DOTs Reporting Factors as "Of Little Importance" or "Of No Importance" in Decisions to Contract Out Activities

	Number of state DOTs, by highway activity						
Factor	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way activities
To obtain cost savings	32	37	36	24	20	22	31
To identify innovative approaches or new techniques	21	23	34	15	20	14	32
To meet federal or state legislative mandates, legal requirements, or policy initiatives	17	24	16	15	21	16	26
To increase speed of completion or to meet specific time frames	5	6	22	5	9	8	2
To access specialized skills or equipment	4	10	16	3	7	4	10
To maintain flexibility or manage variations in department workload	0	2	6	5	3	9	3
Lack of in-house staff	1	1	1	4	2	2	3

Source: GAO survey results.

While cost savings are rarely the driver in the decision to contract out highway activities, the perception of higher contracting costs may influence states to continue to perform activities in-house, rather than contracting out the activities. In our survey, state DOTs listed the higher costs of consultants and contractors as a "very important" or "important" factor in the decision to use in-house staff to perform an activity more times overall than all but one factor, as shown in table 5. As an example, officials at the Pennsylvania DOT conducted an evaluation and found that it would be more expensive to contract out for highway line painting and decided to continue to do the majority of this work with in-house staff.

Table 5: Number of State DOTs Reporting Factors as "Important" or "Very important" in Decisions to Use Department Staff to Perform an Activity

	Number of state DOTs, by highway activity						
Factor	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way activities
The need to retain key skills and expertise in-house	33	37	34	18	28	30	33
Costs of consultants/ contractors are greater than using in-house staff	24	25	30	19	24	23	24
Belief that work will be of higher quality if performed by in-house staff	25	28	24	12	18	13	21
Belief that work can be performed more quickly using in-house staff	16	20	12	13	24	17	27
Legal restrictions or policy initiatives regarding the use of consultants or contractors	11	11	13	7	9	10	11
Required skills or expertise are not available in the private sector	4	3	7	2	6	7	9
Concerns with liability or accountability for contracted work	3	3	10	4	11	7	10
Lack of competition/ insufficient number of bidders	3	3	3	4	4	3	3

Source: GAO survey results.

State DOTs Do Not Formally Assess Costs and Benefits before Contracting Out Work

Although state DOTs consider cost issues and estimate the costs of performing certain activities, none of the 10 departments from which we interviewed officials had a formal process in place to systematically or regularly assess the costs and benefits of contracting out activities before entering into contracts. State officials we interviewed acknowledged difficulties in accurately comparing costs of work performed in-house and work performed by contractors and consultants. For example, Minnesota DOT officials stated that they have difficulties in determining how to properly calculate overhead rates for in-house staff. Reports from state auditors in several states also acknowledged difficulties in comparing the costs of using consultants versus using in-house staff. Some reports also found that the highway departments in their states did not thoroughly or adequately study costs associated with the use of consultants compared with in-house staff to effectively manage the use of consultants, or actively negotiate with consultants to ensure that contract prices were fair and reasonable.

While formal assessments are not undertaken, officials from several state DOTs we interviewed generally perceived contracting out to be more expensive than using in-house staff, particularly for engineering services. In fact, no state DOT official we interviewed perceived engineering work to be cheaper on an hourly basis when contracted out. However, some officials indicated that they found opportunities for cost savings in some circumstances for specific activities. For example, the Utah DOT found that it was cheaper to contract out its pavement management data collection work because it allowed the department to avoid having to invest in the expensive equipment required, which tends to become rapidly outdated. Officials from another state DOT acknowledged that there were potential cost efficiencies through contracting if contract employees were laid off during periods of reduced activity, such as during the winter months. This department conducted an analysis that found that if the agency laid off consultant construction inspectors for at least 3 months out of the year, the agency's cost for the inspectors would equal that of in-house employees. However, officials stated that the department has not laid off consultant inspectors consistently due to concerns that the department would not be able rehire them once their services were needed again.

A number of studies have attempted to compare the costs of contracting out and using in-house staff for highway activities. In our review of these studies, we identified a series of methodological issues and other limitations that make it difficult to make any conclusions about whether consultants and contractors are more or less expensive than public

employees over the long term.[15] In addition, we reviewed other studies that have attempted to synthesize the results of existing cost comparisons and have raised many of these same issues. First, numerous challenges exist in obtaining accurate and reliable data to make comparisons. Such challenges include difficulties in properly assigning in-house overhead costs to specific projects and activities, finding "like" projects to compare, and using state DOT systems and records that have incomplete and unreliable data. Second, very few of the studies we reviewed sought to systematically determine the benefits resulting from contracted work or in-house work, thus providing an incomplete picture as to the extent to which contracting out highway activities might or might not be desirable. For example, additional costs of using consultants or contractors could be offset by benefits in completing the project more quickly than it would have been done by in-house staff, or the quality of the work may be worth the premium paid for the service. Finally, the studies did not adequately consider the long-term implications of contracting out work or performing it in-house, such as long-term pension obligations associated with in-house employees that are not incurred when work is directly contracted out.

Additional Factors Can Also Play a Role in Contracting Decisions

In addition to the factors that we have previously discussed, other considerations can play a role in a state DOT's decision of whether to contract out certain activities. Next to the staffing issues that we have previously discussed, state DOTs most frequently reported using consultants to meet specific time frames or to increase the speed of completion of a task as an "important" or "very important" factor. State-level legislative requirements and policy mandates are also sometimes factors in state DOTs' decisions to contract out work. For instance, the South Carolina Legislature enacted a budget provision in 1996, encouraging the highway department to use private contractors for bridge replacements; surface treatments; thermo-plastic striping; traffic signals; fencing; and guardrails, whenever possible. In our survey, the Alaska DOT responded that one of the reasons it contracts out preliminary engineering work is to satisfy direction that it has received from the state government on using consultants. Conversely some states may also have legislative limitations on their ability to contract out work. For example, the California DOT, until recently, had only limited authority to contract out engineering services under the California constitution.

[15]See appendix II for a more detailed discussion of the cost comparison studies that we reviewed.

Regarding the decision to keep work in-house, the most commonly cited factor in both our interviews and our survey was the desire to retain key skills and expertise. State DOTs recognize that they need to maintain a core of employees with sufficient experience and expertise to be able to effectively oversee and manage consultants and contractors and to also develop the expertise of more junior highway department employees. In both our interviews and our survey, State DOT officials stated that they often consciously keep certain activities in-house so that employees can improve their skills.

The results from our survey indicated that state DOTs' perceptions regarding differences in quality between work performed in-house and work contracted out may at times be an important factor in decisions to keep work in-house. For preconstruction activities in particular, "belief that work will be of a higher quality if performed by in-house staff" was one of the factors most frequently listed as being "very important" or important" in the decision to perform work with in-house staff. Furthermore, one state DOT noted in the survey that the consultants they have used to perform construction engineering and inspection work did not have adequate experience to effectively do the job. In our interviews, few state officials expressed strong beliefs about differences in quality between in-house and contracted out work, although some departments acknowledged that the quality of work varies, depending on the firm being used, and that there have been issues regarding the performance of specific firms.

We also performed a correlation analysis to determine whether the amount of work that state DOTs contract out is associated with certain demographic or economic conditions in the state.[16] The level of correlation between most of the economic and demographic variables selected for the analysis and the percentage of work that state DOTs contract out was relatively weak or nonexistent. However, among the variables that we considered, the percentage of a state's population living in urban areas had the strongest positive correlation with the amount of work that states contract out in preliminary engineering, design, and construction engineering and inspection activities.[17] This correlation may occur

[16]Although all 50 states completed the survey, some states did not provide values for all activities. The number of states that provided values ranges from 39 to 46, depending on the activity.

[17]The correlation coefficient for population in urban areas ranged from 0.41 to 0.45 across the activities.

because, as state DOT officials told us, they are more likely to contract out larger and more complicated projects, and there may be more of these types of projects in those states that are more urbanized. Also, for the majority of activities studied, there appears to be a moderate positive correlation between the amount of work contracted out and the pace at which states' populations have grown. This correlation is consistent with the possibility that more rapidly growing states contract out greater amounts of work to help meet surges in their workload spurred by the increased demand for highways that growing populations foster, but may also be due to other factors.

State DOTs Use Various Controls to Protect the Public Interest, but They Face Additional Challenges Arising from Current Contracting Trends

State officials we interviewed told us that they have sufficient tools and procedures in place to monitor and oversee contractors to ensure that the public interest is protected. These tools and procedures include such things as prequalification of contractors and consultants, regular monitoring procedures, assessments of work performed, and standards and requirements for certain types of work. However, 10 of the 11 state auditor reports we reviewed found weaknesses in state DOTs' contracting and oversight practices. With current trends in contracting state DOTs face additional challenges in conducting adequate oversight and monitoring. In particular, states' oversight has generally become further removed from the day-to-day work on a project, and state officials expressed long-term concerns in retaining adequate expertise and staff needed to adequately oversee a growing contractor and consultant workforce.

State DOTs Use a Variety of Tools and Processes to Protect the Public Interest, Although Such Controls Are Inconsistently Applied

State DOTs' contracts with consultants and contractors include a variety of mechanisms and controls that are intended to address potential project risks and protect the public interest, and the state officials with whom we spoke believe that the controls they have in place are adequate to protect the public interest. For example, state DOTs may prequalify consulting firms and contractors to ensure that those bidding on projects will be able to successfully perform contracted activities. A previous survey on state contracting practices found that state DOTs use a prequalification process for about two thirds of the activities they contract out. The survey found that prequalification processes were most common for design, right-of-way, and operations activities, while prequalification processes where less common when contracting out for maintenance and construction work. A majority of state DOT officials we interviewed also stated that they have prequalification processes for at least some activities. As part of their prequalification requirements, state DOTs examine consultants' and

contractors' previous job experience and work capacity to identify individuals and organizations from which the agency may accept a bid. In addition, for engineering services, state DOTs are required to use a qualification-based selection process to identify best-qualified bidders. It is only once these best-qualified bidders have been identified that the highway department enters into price negotiations to determine a "fair and reasonable" price for the contracted services.[18]

States also report that they have policies to regularly monitor and assess consultants and contractors during the project and upon project completion and may include these assessments into prequalification determinations for future projects. State officials indicate that a state employee is always ultimately responsible for any particular project or service and, therefore, are responsible for ensuring that consultants and contractors are performing the work according to contract provisions and other applicable standards and specifications. State DOTs may address poor performance on an ongoing project by requesting that the contractor or consultant replace a particular employee or by requesting that the contractor or consultant address any construction mistakes. In extreme circumstances, state DOTs can also withhold payment to consultants or contractors. A poor performance rating at the end of a highway project may result in a reduced chance of securing future contracts.

All state DOTs have policies and rules governing consultant and contractor independence. For projects on the National Highway System, state DOTs require consultants and contractors to certify that they do not have any potential or perceived conflicts of interest. Some state DOTs have prohibitions against performing both design and construction inspection activities.

State DOTs have also developed various standards, specifications, and policies to help ensure that the public interest is protected on highway projects. State DOTs require that standards and specifications be followed whether work is performed by department staff or contracted out. When work is contracted out, state DOTs outline all relevant standards and specifications—such as design and construction standards, and

[18]States are required to use the qualification procedures adopted by the Brooks Architect-Engineers Act (Pub. L. No. 92-582) when using federal-aid funds to procure contractors to provide architectural and engineering services (23 U.S.C. § 112). State and local agencies are also required to use the indirect cost rates established by a cognizant agency audit (23 C.F.R. § 172.7).

specifications regarding materials acquisitions—in the terms of the contract after a winning bidder has been selected.

Finally, federal regulations require each state agency to have an approved quality assurance program for materials used in and the construction of federal-aid highway construction projects.[19] Quality assurance programs identify contractors' materials sampling, testing, and inspection requirements as well as specific quality characteristics to be measured for project acceptance. The regulations also include requirements that each state DOT's quality assurance program provides for an acceptance program and an independent assurance program. In 1995, FHWA revised its regulations to allow state DOTs to use contractor material testing data in their acceptance decisions if accompanied by validation and verification procedures. However, state employees must always make the final acceptance decision. On full oversight projects, the state's FHWA division office is responsible for providing final acceptance of projects at the completion of construction, but the state is still responsible for providing project-level acceptance of construction and materials quality during construction.

State auditors in 10 of the 11 states that responded to our inquiry found numerous weaknesses in state DOTs' contracting and oversight practices. For example, one auditor's report found that the state DOT's prequalification procedures do not always ensure that the most qualified bidder is selected. Furthermore, auditors' reports in at least 5 states found that the state DOTs did not aggressively negotiate fair and reasonable prices when using qualifications-based selections, or had not established criteria to define what constitutes a reasonable price, resulting in negotiated prices that are perceived to be too high compared with national benchmarks, or compared with other states' experience. In addition, another auditor report found examples where the state DOT failed to consistently assess consultant and contractor performance, and examples where quality assurance procedures were not adequately followed, which can result in lower-quality highway construction.

[19]23 C.F.R. Part 637.

Current Trends in Contracting Out Pose Challenges for State DOTs in Conducting Adequate Oversight and Monitoring

State DOTs may encounter challenges in conducting sufficient oversight and monitoring for highway projects, given current trends in contracting out. For projects using federal-aid highway funds, FHWA requires that a state highway employee always have ultimate responsibility for successful project completion. However, when consultants and contractors have oversight or managerial roles on a project, the state highway employee may be further removed from the day-to-day project activities. This situation has the potential to limit the ability of state DOT employees to identify and resolve problems that occur during construction. For example, the National Transportation Safety Board—in its report on an accident in Colorado in which a car collided with a steel girder that had fallen from an overpass—found that the state DOT did not conduct active oversight, and that it was the department's policy to avoid telling a contractor how to accomplish contracted work and to avoid interfering as the contractor carried out the work.

In addition, state highway employees are increasingly moving into project manager roles in which they may oversee several projects. Several state DOT officials cited concerns and challenges in conducting adequate oversight in such situations. In some states, consultants oversee multiple projects as well. For example, the Maryland State Highway Administration is beginning to use construction management inspection contracts. Under these contracts, the contractor becomes responsible for managing work on specific projects as well as a portfolio of projects.

Erosion of state DOTs' in-house expertise as a result of staff cuts and retirements also creates additional risk in the long term and creates challenges for state DOTs in effectively overseeing consultant and contractor work. All of the state DOT officials with whom we spoke believe that they currently have sufficient expertise in-house to carry out their highway programs and to oversee consultants and contractors. However, according to officials at several state DOTs, there is a "thinning" of expertise in their departments and fewer knowledgeable staff are available to oversee and monitor consultants. As we have previously stated, state DOTs have not been able to hire a sufficient number of staff to replace experienced staff who may soon be retiring. In addition, state DOTs compete with private firms for what in some states is a relatively small number of new engineers graduating from college. State highway officials in several states also commented that, given the limitations inherent in a state budget, college graduates often elect to either (1) go into the private sector right away or (2) receive training at the state DOT, and then leave for a higher paying job in the private sector.

Ensuring that consultants and contractors are independent and free from conflicts of interest can be difficult. As we have previously discussed, state DOTs are using consultants and contractors for a greater variety of services, including project engineering and design, construction inspection, and highway maintenance. Officials from several state DOTs have expressed some concern because consultants and contractors may work on multiple state projects where they are the lead on one project and a subconsultant/subcontractor on another project. For example, one firm may have an undisclosed financial relationship with another firm beyond the work being done with the state DOT, and this situation could pose difficulties if one of these firms is hired to inspect the other. While some state DOT officials acknowledged that situations have arisen that present the potential for conflicts of interest, none of the state DOT officials with whom we spoke thought their agencies had any significant problems with contractor and consultant independence.

FHWA Focuses Much of Its Oversight Efforts on Ensuring That State DOTs Comply with Laws and Regulations

The federal-aid highway program provides states with broad flexibility in deciding how to use their funds, which projects to pick, and how to implement these projects; therefore, FHWA has a limited role in determining how consultants and contractors should be used by state DOTs. FHWA performs project-level oversight on only a limited number of projects. FHWA division offices also conduct reviews of state programs and processes that are related to the use of consultants and contractors. These oversight activities are generally limited to ensuring compliance with federal rules and regulations. On a national level, FHWA has recently conducted some reviews that touch on states' use of consultants and contractors. Through these reviews, FHWA has identified a variety of risks associated with the use of consultants and contractors, but the agency has not fully assessed how to respond to these risks.

FHWA Has a Limited Role in Determining How Consultants and Contractors Are Used on Highway Projects

FHWA has only limited authority over many aspects of state DOTs' programs, including their contracting practices. According to FHWA officials, the agency does not have any specific policy regarding highway departments' use of consultants and contractors beyond those requirements contained in existing laws and regulations. Furthermore, while federal law requires state highway departments to be "suitably equipped and organized," the law also includes a provision that a state may engage, to the extent necessary or desirable, the services of private

engineering firms in meeting these provisions.[20] According to FHWA, some FHWA division offices have interpreted this regulation as providing state DOTs with broad authority to use consultants to perform department work. FHWA has compiled relevant legislation and regulations regarding the contracting out of highway activities on its Web site to serve as guidance to state DOTs when contracting out highway activities.

FHWA has also played a role in encouraging states to consider alternative contracting techniques and methods, and to consider greater involvement from the private sector through public-private partnerships to improve project delivery and seek out alternative sources of funding. For example, FHWA has encouraged contracting techniques and public-private partnerships through Special Experimental Projects 14 and 15, with many of these techniques allowing consultants and contractors to assume additional responsibilities in the delivery of highway projects.

Some FHWA Oversight Activities Are Associated with the Use of Consultants and Contractors

While state DOTs conduct project-level oversight on the majority of highway projects, FHWA retains project-level oversight on a limited number of projects, based on its stewardship agreement with the state DOT. Regarding states' use of consultants and contractors, the agency's oversight efforts are generally focused on ensuring compliance with existing laws and regulations. For example, the division office must concur in the award of certain contracts, and when providing concurrence for an engineering contract, a division office will seek to ensure that the state DOT has used an appropriate qualifications-based selection process, as required by law.

When conducting project-level oversight, division office officials will also do at least some on-site monitoring of the work. During these on-site visits, FHWA will assess the project's status and verify that the project complies with plans and specifications. As part of this process, division office officials told us that they will often observe ongoing project activities to ensure that materials testing and other quality control and quality assurance procedures follow regulations. The amount of on-site oversight varies greatly, depending on the perceived project risk, which is generally determined according to the cost of the project, its complexity, and its visibility to and potential impact on the public. Division office officials told

[20] 23 U.S.C. § 302(a).

us that on projects with very high visibility, they will have an engineer on-site up to several times a week. However, for other projects, they may not send an engineer out to the site more than once or twice over the life of a project. According to division office officials, even when conducting project-level oversight, they still rely on the state DOTs to properly administer the project and that much of FHWA's role is not to perform direct oversight, but rather to make sure that the highway department is doing appropriate oversight. Once the project is completed, FHWA is responsible for final inspection and project acceptance.

FHWA also conducts oversight related to the use of consultants and contractors through reviews of state programs and processes that may involve consultants and contractors. To identify those areas that pose the greatest threats or opportunities to states' federal-aid programs and to assist the division offices in allocating their limited resources in the most effective manner, FHWA has encouraged a risk-based approach to identifying areas for review, and given division offices flexibility in determining which program areas to focus on in their risk assessments. Through this risk assessment process, many division offices have identified issues related to the use of consultants and contractors. We have identified at least 15 states where FHWA division offices have conducted process reviews specifically concerning the contracting out of work over the past 5 years. We have also identified at least 2 other states where FHWA division offices are currently conducting similar reviews. These reviews focus on a variety of issues related to the use of consultants and contractors, and many have recommendations for how state DOTs can improve their processes for procuring and administering consultants and contractors.

As a result of division offices' identification of the use of consultants and contractors as an area of high risk, FHWA headquarters has also conducted national reviews that involve issues related to this matter. Under its recently created National Review Program, FHWA has completed reports on quality assurance and oversight of local public agencies that include discussions of issues associated with the contracting out of work. FHWA is also currently undertaking an additional review that is looking at the administration of consultant contracts. In addition to these reviews, FHWA has also conducted a series of annual reviews of state DOTs' quality assurance activities over the last several years that have highlighted concerns related to material testing conducted by consultants.

A final way that FHWA exercises oversight relating to the use of consultants and contractors is through its approval of various state DOT documents. As part of their oversight responsibilities, division offices are responsible for approving a variety of state DOT manuals, standards, and policy documents that establish procedures for implementing the federal-aid highway program in the state. For example, state DOTs must develop written procedures outlining their process for procuring consultant services, which must be approved by FHWA.[21] FHWA must also approve other documents that may not be directly focused on the contracting out of work, but that address work that is often performed by consultants or contractors. For example, division offices are responsible for approving state DOTs' quality assurance programs for materials on construction projects.

FHWA Has Identified Risks Associated with the Use of Consultants and Contractors, but It Has Not Fully Assessed How to Respond to These Risks

FHWA has identified many ways that the contracting out of work can pose risks to the federal-aid highway program. For example, a series of FHWA reviews of quality assurance activities found many critical deficiencies in state oversight of consultants in these activities, such as the lack of independent sampling of highway materials for verification tests; inadequate statistical comparisons of test results; and insufficient state control of test samples, sampling locations, and testing data. Such shortcomings in state DOTs' quality assurance programs could potentially have a detrimental effect. For example, in its quality assurance review, FHWA states that pavement on highways is deteriorating faster than expected and asserts that this is likely, at least in part, due to the identified weaknesses in state DOTs' quality assurance programs.[22] In addition, another national FHWA study related to the use of local public agencies found that local agencies are often highly dependent on consultants to deliver the projects and may not have the expertise to adequately oversee the work of the consultants and to be sure of the quality of the services they are getting. The study further found that some states may not be conducting adequate oversight over these projects, and that the states' reviews tend to be reactive, rather than proactive.

[21]23 C.F.R. § 172.9.

[22]U.S. Department of Transportation, Federal Highway Administration, Office of Professional and Corporate Development, *Quality Assurance in Materials and Construction, Final Report* (Washington, D.C.: June 2007), 9.

Division offices have also cited areas of risk associated with the growing use of consultants. For example, an Illinois Division Office process review raised concerns about the possibility that firms that had performed design work for a project might also do construction inspection work on the same project, which would pose the potential for conflicts of interest. In our interviews with division office officials, many cited the challenges that contracting out poses for state DOTs in regard to maintaining sufficient in-house expertise. Also, several division office officials perceived contracting out work to be more expensive than keeping the work in-house, resulting in an inefficient use of public funds. Division office officials we interviewed also pointed out that FHWA's division offices have also suffered reductions in staff and an erosion of expertise and experience, which can hamper their oversight activities.

FHWA officials stated that many division offices also identified areas of risk related to the contracting out of work during FHWA's first national risk management cycle. Although the use of consultants and contractors was not one of the 49 key elements that division offices were required to assess, many division offices still identified it as an area of risk. According to FHWA, 23 division offices identified risks related to the use of consultants as one of their top risks, with division offices finding such risks present throughout various state DOT program areas, including in construction, design, and right-of-way. These risks included concerns that consultants do not have the necessary skills to complete tasks according to federal regulations, consultants are not supplying sufficient personnel or resources to complete jobs, and state DOTs have been overly relying on consultants to select and manage contractors.

While FHWA has identified risks associated with the use of consultants and contractors, the agency has not comprehensively assessed how, if at all, it needs to adjust its oversight efforts to protect the public interest, given current trends in the use of consultants and contractors. Also, FHWA has not instructed its division offices to consider issues related to the amount and type of work contracted out when outlining oversight responsibilities in their stewardship agreements with state DOTs. Overall, FHWA division offices generally described their role as ensuring compliance with existing regulations and not assessing the performance of state DOTs in achieving transportation goals. This has the potential to limit the value of the agency's oversight activities. For example, FHWA acknowledges in its report on quality assurance in materials and

construction that it is possible to have a quality assurance program for materials that is compliant with regulations, but is not performing effectively, and vice versa.[23] This FHWA report also finds that division offices are often not fully aware of what components should be part of quality assurance programs, and, as a result, the effectiveness of these programs is not being adequately assessed.

FHWA has made progress in addressing some of the concerns related to its oversight program and is considering additional steps to mitigate risks associated with the use of consultants and contractors in the future. The agency is currently developing an implementation plan in response to the recommendations in its quality assurance report. This plan may seek to address some of the risks associated with the involvement of consultants and contractors in the quality assurance process. Also, FHWA is continuing to refine its risk management approach to better identify risks throughout the country and to more fully develop methods for addressing identified risks. Finally, as we have previously discussed, FHWA division offices have been working to revise their current stewardship agreements to incorporate further considerations of risk and to also identify performance measures that will assist in increasing accountability in the federal-aid program, based on FHWA guidance. However, FHWA guidance gives state DOTs and division offices broad flexibility in how they assess risks and develop performance measures. As of October 2007, FHWA reported that 21 of the agreements had been revised, with 15 of them incorporating considerations of risk and performance measures. Five more agreements incorporated considerations of risk, but not performance measures.

Conclusions

State DOTs have long used contractors and consultants to augment existing workforces. Recent trends suggest that consultants and contractors are used more than ever before and in a multitude of different activities—from designing projects, to appraising and acquiring rights-of-way, to managing and inspecting projects—and, in some cases, consultants and contractors may be responsible for projects from beginning to end. While there is no conclusive evidence of the long-term differences in costs and benefits between using consultants and contractors and obtaining additional state staff, this consideration is largely inconsequential to state DOTs because many are now dependent

[23] *Quality Assurance in Materials and Construction*, 9.

on consultants and contractors to deliver their growing highway programs. Given this reality, effective oversight and monitoring of consultant and contractor workforces become critical to state DOTs to ensure that work is performed according to standards and specifications, and that materials used meet quality and performance standards. While the state officials that we interviewed generally believe they have sufficient controls in place to conduct such oversight, there is some evidence from state auditor's reports that these controls are not always implemented effectively. Furthermore, state officials we interviewed recognize that there will be increased risk to the highway program over the long term, given (1) the growing potential for conflicts of interest and independence issues and (2) the reality of a changing workforce at state DOTs and difficulties in attracting and retaining staff with key skills.

We have previously reported that there is a need for a fundamental reexamination of the highway program and a need for national transportation goals to be better defined and linked to performance measures to evaluate what the respective programs actually accomplish. Regarding the growing use of consultants and contractors by state highway departments, FHWA's oversight has generally been focused on ensuring that state processes related to this matter are in compliance with existing regulations, and has not sufficiently focused on the performance and effectiveness of those processes in protecting the public interest or in achieving national transportation goals. We recognize that FHWA has a number of efforts under way that are geared toward refining FHWA's approach to oversight of state DOTs, including developing a plan to address the issues raised in its national review of quality assurance programs, working to identify areas of vulnerability to the federal-aid highway program through its national risk management cycle, and continuing a national program review currently under way of consultant administration. In addition, division offices are continuing to revise their stewardship agreements to be more risk- and performance-oriented. However, further efforts to assess how best FHWA could adjust its oversight and focus its activities on consistently ensuring the performance and effectiveness of state DOTs' programs and processes as they relate to the management of consultants and contractors would increase the value of FHWA oversight in this area. In addition, while several stewardship agreements have recently been revised to incorporate a more risk- and performance-oriented approach to conducting federal oversight, most states have yet to revise their agreements, and some revised agreements have not incorporated performance measures.

Recommendations for Executive Action

To more effectively and consistently ensure that state DOTs are adequately protecting public interests in the highway program, given current trends in the use of consultants and contractors, we recommend that the Secretary of Transportation direct the Administrator of the Federal Highway Administration, in the context of FHWA's ongoing activities related to quality assurance programs and risk management, to work with FHWA division offices to (1) give appropriate consideration to the identified areas of risk related to the increased use of consultants and contractors as division offices work to target their oversight activities and (2) develop and implement performance measures to better assess the effectiveness of state DOTs' controls related to the use of consultants and contractors to better ensure that the public interest is protected.

Agency Comments

We provided copies of this report to the Department of Transportation, including FHWA, for its review and comment. DOT officials provided technical clarifications, which we incorporated as appropriate. The department took no position on our recommendation to work with FHWA division offices regarding state DOTs' increased use of consultants and contractors.

We are sending copies of this report to interested congressional committees, the Secretary of Transportation, and the Administrator of the Federal Highway Administration. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or at heckerj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix IV.

Sincerely yours,

JayEtta Z. Hecker
Director, Physical Infrastructure

Appendix I: Objectives, Scope, and Methodology

This report addresses the following objectives: (1) the recent trends in the contracting out of state highway activities; (2) the factors that influence state departments of transportation (state DOT) in deciding whether to contract out activities and the extent to which state DOTs assess costs and benefits when making such decisions; (3) how state DOTs protect the public interest when work is contracted out, particularly when consultants and contractors are given substantial responsibility for project and service quality and delivery; and (4) the Federal Highway Administration's (FHWA) role in ensuring that states protect the public interest.

To determine the recent trends in the contracting out of state highway activities, we performed a literature review of existing research and survey data to identify general trends over the periods covered by those surveys and to use as a general baseline for comparison with current levels of contracting out. We also surveyed and received responses from all 50 state DOTs, using a Web-based questionnaire. In developing the survey, we consulted a representative from the American Association of State Highway Transportation Officials (AASHTO) and also consulted a highway expert who is a former President of AASHTO, a former head of the Utah DOT, and an author of numerous studies on highway contracting issues. On the basis of the information received in these consultations, we revised our survey instrument. In addition, we conducted survey pretests over the telephone with state DOTs in Illinois and Maryland. We also revised our survey instrument on the basis of information we received in these pretests. We conducted the survey from mid-June to mid-September 2007. During this period, we sent 2 rounds of follow-up e-mails to nonrespondents in addition to the initial e-mailing. We also made follow-up telephone calls and sent follow-up e-mails to several state DOTs to encourage them to complete the questionnaire. We then surveyed the state DOTs to learn about the extent to which they contract for services across 7 categories of highway activities, including preliminary engineering, design, construction engineering and inspection, federal-aid eligible preventive maintenance, routine maintenance activities not eligible for federal-aid program funding, ongoing operations, and right-of-way appraisals. We also surveyed state DOTs to determine how the levels of contracting for these activities have changed over the past 5 years and to gather information about potential future trends in contracting. In addition, we used the survey to identify which factors state DOTs said are driving them to contract out activities or to keep work in-house. Finally, the survey gathered data on state DOTs' use of alternative contract types and techniques and collected information on certain contracting concerns that are specific to design-build contracts. In developing the questionnaire and in collecting and analyzing the data, we took steps to minimize errors

that could occur during those stages of the survey process. The detailed survey results are available in appendix III.

Because this was not a sample survey, it has no sampling errors. However, the practical difficulties of conducting any survey may introduce errors, commonly referred to as "nonsampling" errors. For example, difficulties in interpreting a particular question, making sources of information available to respondents, entering data into a database, or analyzing these data can introduce unwanted variability into the survey results. We took steps in developing the questionnaire, collecting the data, and analyzing the data to minimize such nonsampling errors. For example, social science survey specialists designed the questionnaire in collaboration with GAO staff who have subject matter expertise. Then, as we have previously noted, our questionnaire was reviewed by experts in this field and was pretested in 2 states. When we analyzed the data, an independent analyst checked all computer programs. Since this was a Web-based survey, respondents entered their answers directly into the electronic questionnaire—eliminating the need to key data into a database and further minimizing errors.

To gather further information on the recent trends in the contracting out of state highway activities, we performed a series of in-depth interviews with highway department officials in 10 states throughout the country: Arizona, California, Georgia, Illinois, Louisiana, Maryland, Minnesota, Pennsylvania, South Carolina, and Utah. These interviews allowed the team to gather in-depth and contextual information on state DOT contracting practices that could not be obtained through a survey. We conducted all of the interviews using a data collection instrument that we developed.

In selecting state DOTs to interview, we used a nongeneralizable sample, rather than performing random sampling. We chose this approach to ensure that the sample set included state DOTs with a range of contracting experiences and practices. When selecting which state DOTs to include in the sample, we considered a range of criteria, including (1) the region in which the state is located; (2) the degree to which the state DOT contracts out highway activities; (3) the range of contracting approaches the state uses, including nontraditional project delivery methods such as design-build or asset management as reported in previous reports; (4) the legal and policy requirements the state faces in regard to contracting out highway activities; and (5) the extent to which the state has performed analyses of the costs and benefits of contracting out highway activities. To select the states for the sample, we reviewed relevant academic, expert,

state, and federal research and existing survey data on state outsourcing activities to make an initial assessment of where various state DOTs fell along the spectrum for each of the criteria and to identify any unique features of the states' outsourcing programs that would be particularly useful to study in greater depth. For example, we looked for criteria such as state DOTs that had developed unique contracting practices, state DOTs that were rapidly changing the way their departments conducted business, and state DOTs whose outsourcing experiences had been particularly successful or problematic. Lastly, we generally sought to avoid selecting states that had already been studied in great depth and whose contracting experiences are already well-documented, such as Florida.

To determine the factors that influence state DOTs in deciding whether to contract out activities and the extent to which state DOTs assess costs and benefits when making such decisions, we used state DOTs' responses from our survey regarding the importance of various factors in their decisions to contract out various highway activities and in their decisions to continue to perform work with in-house staff. In addition, we relied on information gathered in our in-depth interviews to further determine the importance of various factors in contracting decisions and to gain important contextual information on these various factors that could not be achieved through the survey. We also reviewed the literature to identify existing studies that sought to consider the costs and benefits of contracting out highway activities versus performing them with in-house staff, and we compiled and summarized the results from various studies. We also identified methodological limitations associated with such studies and the potential impacts they have on the reliability of any findings.

To determine whether states' decisions to contract out highway activities were associated with certain demographic or economic conditions in each state, we conducted a correlation analysis. For the analysis, we used data from our survey on the percentage of work that state DOTs contract out for 7 types of activities. Although all 50 states completed the survey, some states did not provide values for all activities. The number of states that provided values ranges from 39 to 46, depending on the activity. We then identified a series of state characteristics to test whether they are associated with the extent to which states contract out these activities. These variables included population, population density, population growth over the past 5 and 10 years, the percentage of a state's population living in urban areas, annual vehicle miles traveled in the state, annual vehicle miles traveled per person in the state, total lane miles per person in the state, the number of road miles with a pavement international roughness index score greater than 170 (a measure of pavement quality,

with a score greater than 170 indicating pavement of poor quality) per person in the state, state per capita income, state pension fund liabilities per person, state highway capital outlays per person, and the change in state highway capital outlays over the past 5 and 10 years. We selected these variables because we could identify plausible reasons that states with higher values of these variables might be either more or less likely than states with lower values to contract out highway activities. We identified reasons that each of these variables could impact either highway demand or supply conditions in a state, or could impact the state's ability to conduct highway activities with an in-house workforce. Data on these various state characteristics were compiled from the U.S. Census, FHWA, and the Public Fund Survey.[1] We then calculated the correlation coefficients for the 98 relationships to be tested and analyzed the results to see if there were any clear positive or negative associations among the variables and to assess the strength of such associations, as shown in table 6. We did not, however, analyze the associations among these variables in a multivariable analysis because of the lack of a strong conceptual framework based in economic theory for determining an appropriate model. Given this, our analysis only considered the percentage of work contracted out singly with each economic or demographic characteristic selected and did not control for the effects of other characteristics on contracting levels. Multivariable analysis might have revealed more complex relationships among the state characteristics and between those characteristics and the level of contracting out highway activities.

[1]The Public Fund Survey is an online compendium of key characteristics of 102 public retirement systems that administer pension and other benefits for 12.8 million active public employees and 5.9 million retirees and other annuitants, and that hold more than $2.1 trillion in trust for these participants. The membership and assets of systems included in the survey represent more than 85 percent of the nation's total public retirement system community. The survey is sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement.

Table 6: Correlation Coefficients

Variables	Preliminary engineering	Design	Construction engineering and inspection	Federal-aid eligible preventive maintenance	Routine maintenance	Ongoing operations	Right-of-way
Population density	0.434	0.327	0.244	(0.141)	0.088	0.147	(0.101)
Annual vehicle miles traveled per person	(0.252)	(0.226)	(0.335)	0.163	0.034	(0.409)	(0.047)
Total lane miles per person	(0.251)	(0.282)	(0.213)	(0.039)	(0.289)	(0.294)	(0.046)
Number of lane miles with an International Roughness Index >170 per total lane miles	0.179	(0.053)	0.028	(0.092)	(0.084)	0.111	(0.174)
Per capita income	0.221	0.059	0.322	(0.153)	(0.052)	0.082	(0.113)
Percentage of state population living in urban areas	0.409	0.411	0.452	(0.021)	0.224	0.372	0.131
State pension fund liability per person	0.003	0.107	0.211	(0.006)	(0.093)	0.055	(0.040)
Highway capital outlays per person	(0.179)	(0.096)	(0.174)	(0.181)	(0.224)	(0.015)	(0.119)
Population	0.030	(0.057)	0.288	0.043	0.213	0.220	0.010
Annual vehicle miles	0.034	(0.042)	0.270	0.061	0.292	0.238	0.000
Population growth (past 10 years)	(0.003)	0.219	0.184	0.071	0.226	0.031	0.091
Population growth (past 5 years)	0.013	0.224	0.191	0.082	0.225	0.064	0.084
Change in capital outlays (past 10 years)	0.157	0.051	0.050	(0.053)	0.249	0.003	0.037
Change in capital outlays (past 5 years)	0.051	0.124	0.184	(0.229)	0.116	0.017	(0.109)

Source: GAO survey results.

To determine how state DOTs protect the public interest when work is contracted out, particularly when consultants and contractors are given substantial responsibility for project and service quality and delivery, we used information from our in-depth interviews with the state DOTs. In our interviews with the state DOTs, we gathered information regarding the manner in which state DOTs define and determine the key interests of the public. We asked state DOTs about the various controls they put in place throughout the highway delivery process to ensure that the public interest is protected when work is contracted out. Along with this, we asked about prequalification procedures, bidding processes, the oversight and monitoring of consultants and contractors while work is being performed, and quality assurance programs, among other things. We also conducted interviews with industry stakeholders from six different organizations knowledgeable about the outsourcing of highway activities to obtain additional perspectives on how state DOTs seek to protect the public interest. In addition, we used state DOT responses from our survey to identify various alternative contract types and techniques that states use to achieve desired outcomes, such as time or cost savings, and to determine how frequently state DOTs use such techniques. Finally, we sent out a request to auditing agencies in all states for any reports available on the contracting out practices of state DOTs and reviewed additional reports discussed in the literature. We reviewed reports from 11 states that addressed their state DOTs' use of consultants and contractors.

To determine FHWA's role in ensuring that states protect the public interest, we reviewed applicable federal laws and regulations as well as FHWA policy and guidance documents. We also interviewed FHWA officials at the national level as well as at 10 division offices corresponding to the 10 state DOTs we selected for in-depth interviews. FHWA headquarters offices we met with include the following: the Office of Infrastructure, the Office of Asset Management, the Office of Professional and Corporate Development, the Office of Program Administration, and the Office of Planning, Environment and Realty. In addition, we reviewed program and process reviews from FHWA's national and division offices to identify key areas of oversight focus and key findings that have been reached in such reviews regarding state contracting procedures and quality assurance procedures.

For this report, we limited the scope of our review to contracts where firms are paid to provide a service related to highway infrastructure. Although essentially contractual relationships, we did not include public-private partnerships—where a firm takes effective ownership of a facility

and assumes control over it, usually for an extended period—in the scope of our work.

We conducted this performance audit from December 2006 through January 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Summary of the Cost Comparison Studies That We Reviewed

In our research, we identified a variety of studies that seek to compare the costs of performing highway activities with in-house staff versus contracting out the work. A variety of parties have conducted such studies, including highway departments, state auditing agencies, academics, industry groups, and employee unions. Some studies focused on one particular state, while other studies considered a range of states' experiences. Of the studies we identified, engineering activities (design, construction engineering and inspection, or both) were the most common focus, although we also reviewed several studies that examined the contracting out of maintenance activities. A few studies examined a range of activities within a state DOT's highway program. While some studies sought to do their own analyses, many simply reviewed and summarized other analyses that have been performed. In addition, several of the studies focused on the methodological challenges faced in conducting cost comparisons and sought to suggest ways that such studies could more effectively be structured, rather than actually performing any of their own cost comparison analyses.

Findings on Costs

Of the studies we reviewed, almost all that considered engineering activities found contracting out to be more expensive. Generally, studies attributed this extra expense to higher salaries paid by private firms, higher overhead costs for private firms, private firms' need to earn a profit, and highway department contract administration costs. Among those studies that performed separate analyses for different types of engineering work, there was some indication that cost differentials may vary, with consultant and in-house costs being more comparable for certain types of engineering activities. For example, one study by PriceWaterhouseCoopers for the Texas DOT found that of the 13 design activities it considered, consultants were more expensive for 8 of these activities. The results were inconclusive for the other 5 activities. Among those 8 activities where consultants were found to be more expensive, the degree to which they were found to be more expensive varied from 27 to 97 percent, depending on the activity. Findings as to the degree by which consultants were more expensive than in-house staff also varied significantly amongst studies. For example, 1 study that reviewed 16 other engineering cost studies found that of the studies that found consultants to be more expensive, consultants were found to be anywhere from less than 16 percent to over 100 percent more expensive.

We reviewed only two studies that found that engineering consultants were less expensive than using in-house employees. The first study, which was performed by the state auditing agency in Alaska, found consultants

to be on average 24 percent less costly. The second study was performed by the Wisconsin Department of Administration and sought to rebut findings in an earlier Wisconsin highway department study that had found consultants to be more expensive. We also have identified one other study discussed in the literature that found that the cost of professional engineering services, as a percentage of total construction costs, declined as the proportion of engineering work contracted out increased. A few studies also found either that there were no significant differences in costs between in-house and consultant performed engineering work, or that existing data limitations and difficulties in developing appropriate methodologies made the accuracy of cost results questionable.

Among those studies that examined differences in costs between in-house and contracted out maintenance work, the picture was more mixed than for engineering activities, with some studies indicating the potential for cost savings through the contracting out of maintenance activities in at least some situations. Studies cited various reasons why contracting out maintenance work could potentially result in cost savings, including the reduced need for state DOTs to make capital investments in expensive equipment, added flexibility for the highway departments to reduce staffing during slow periods (such as the winter), and the increased competition generated by contracting out the work. Studies that identified cost increases associated with the contracting out of maintenance work pointed to difficulties in administering contracts and monitoring performance, to the lack of information to effectively negotiate prices, and to cost escalation after work is privatized.

Methodological Issues and Other Limitations

We identified a series of methodological issues and other limitations that make accurate cost comparisons difficult and potentially impact the reliability of these studies' findings. One of the most problematic aspects of comparing in-house and consultant costs is establishing an appropriate overhead rate for in-house work. State DOTs' accounting systems are often not set up in such a manner that they accurately capture all relevant overhead costs and appropriately apportion them amongst individual projects or functional units in a highway department. Also, data on in-house costs are often incomplete or unreliable. For example, in-house staff may not accurately bill time spent on a specific project, thereby distorting in-house costs for that project. Many studies also leave out costs that may be relevant, such as state insurance costs. There are also other life-cycle costs, such as the pension costs associated with additional public employees that are difficult to quantify and not considered in most studies. Another problem encountered, is that many studies seek to

identify "like" projects and compare the costs of those performed by in-house employees and those performed by consultants or contractors. No two projects are the same, however, and it is often difficult to isolate other variables that may have impacted costs.

A final weakness with the studies that we reviewed is that very few of them sought to systematically determine the benefits of performing work in-house versus contracting it out, thereby providing an incomplete picture of the extent to which contracting out highway activities might or might not be desirable. Some of the studies did use testimonial evidence gathered through either surveys or interviews to attempt to make some assessments of differences in quality, depending on whether work was performed by in-house staff or contracted out. Of those studies, the majority found that quality did not vary significantly depending on whether the work was contracted out or performed in-house. Some studies also provide anecdotal information on some potential benefits or problems with contracting out work. Only one study that we reviewed sought to quantitatively assess differences in quality between in-house and consultant performed work. This study, performed by the state auditing agency in Alaska, compared the number of change orders on construction projects that had been designed by either in-house staff or consultants and the average costs of such change orders. Using this metric, the auditing agency found in-house performed design work to be of a higher quality.

Given that the majority of the state DOTs with we whom we met told us that they tend to contract out larger, more complicated projects, or those requiring certain types of expertise not possessed in-house, relying simply on comparisons of cost may not be appropriate. If consultants are working on larger, more complicated projects, it is reasonable to expect that the costs of these activities, such as design work, may be higher. Also, it is not unreasonable to anticipate that a premium would be paid for specialized expertise. In addition, none of the studies sought to systematically quantify whether there are any time savings associated with contracting out work and what the value of such time savings would be for road users.

Appendix III: Summary Tables of Our Survey Results

This appendix presents selected results of GAO's Web-based survey of state DOTs (see tables 7 to 26). The purpose of this survey was to gather information from the state DOTs about recent trends in their contracting out of state highway activities. We surveyed the state DOTs about the extent to which they contract for services across 7 categories of highway activities, including preliminary engineering, design, construction engineering and inspection, federal-aid eligible preventive maintenance, routine maintenance not eligible for federal-aid program funding, ongoing operations, and right-of-way. We also surveyed state DOTs to determine how the levels of contracting for these activities have changed over the past 5 years and to gather information about potential future trends in contracting. In addition, we used the survey to identify which factors state DOTs said are driving them to contract out activities or to keep work in-house. Finally, the survey gathered data on state DOTs' use of alternative contract types and techniques and collected information on certain contracting concerns that are specific to design-build contracts. We sent this survey to the 50 state DOTs. We received 50 completed surveys for a response rate of 100 percent. However, not all states responded to every survey question. Appendix I contains a more detailed discussion of our objectives, scope, and methodology. We administered this survey from mid-June to mid-September 2007.

Table 7: Number of State DOTs That Reported Changes in Professional Staff over the past 5 Years

	Number of state DOTs, by staff changes			
Staff	**Increased**	**Decreased**	**Stayed the same**	**No basis to judge**
a. Planning and environmental	16	13	18	1
b. Design (roadway, bridges, and traffic engineering)	4	28	17	0
c. Construction engineering and inspections (inspections, materials testing, and scheduling)	9	20	20	0
d. Operations (e.g., ongoing Intelligent Transportation Systems, toll collection, signal and sign systems, etc.)	11	8	23	6
e. Maintenance	6	20	20	1
f. Right-of-Way and Utilities	7	15	24	2
g. Other nonadministrative - Specify below.	2	10	23	12

Source: GAO survey results.

Table 8: Number of State DOTs That Reported Contracting Out Highway Activities in the Most Recently Completed Fiscal Year (Percentage of Total Expenditures for That Activity)

	Number of state DOTs, by percentage of total expenditures contracted out for that activity				
Activity	**0**	**1 to 25**	**26 to 50**	**51 to 75**	**76 to 100**
a. Preliminary engineering	0	8	14	11	10
b. Design	0	5	15	20	4
c. Construction engineering and inspection	4	25	10	3	1
d. Preventive maintenance	5	4	3	4	23
e. Routine maintenance	6	23	5	3	4
f. Ongoing operations	8	16	5	2	8
g. Right-of-way	1	20	16	6	3

Source: GAO survey results.

Table 9: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Preliminary Engineering Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	12	8	10	9	8	2
b. Lack of in-house staff	28	17	3	1	0	0
c. To access specialized skills or equipment	11	20	13	4	0	0
d. To increase speed of completion or to meet specific time frames	12	23	9	4	1	0
e. To obtain cost savings	0	3	10	18	14	4
f. To maintain flexibility or manage variations in department workload	14	22	13	0	0	0
g. To identify innovative approaches or new techniques	1	9	17	17	4	1
h. Other reason(s)	1	1	2	0	2	9

Source: GAO survey results.

Table 10: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Preliminary Engineering Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	9	2	2	19	15	1
b. Costs of consultants/contractors are greater than using in-house staff	5	19	13	5	5	1
c. The need to retain key skills and expertise in-house	14	19	14	0	0	0
d. Lack of competition/insufficient number of bidders	1	2	0	17	24	4
e. Required skills or expertise are not available in the private sector	1	3	4	20	16	4
f. Belief that work can be performed more quickly using in-house staff	5	11	20	6	5	1
g. Belief that work will be of higher quality if performed by in-house staff	3	22	12	7	1	3
h. Concerns with liability or accountability for contracted work	2	1	6	24	13	2
i. Other reason(s)	3	2	0	0	1	9

Source: GAO survey results.

Table 11: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Design Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	11	7	6	13	11	2
b. Lack of in-house staff	25	19	5	1	0	0
c. To access specialized skills or equipment	8	22	10	9	1	0
d. To increase speed of completion or to meet specific time frames	10	22	12	4	2	0
e. To obtain cost savings	0	3	7	18	19	3
f. To maintain flexibility or manage variations in department workload	13	23	12	2	0	0
g. To identify innovative approaches or new techniques	1	13	13	20	3	0
h. Other reason(s)	1	1	0	0	1	11

Source: GAO survey results.

Table 12: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Design Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	8	3	5	18	14	1
b. Costs of consultants/contractors are greater than using in-house staff	9	16	14	5	5	0
c. The need to retain key skills and expertise in-house	23	14	11	1	0	0
d. Lack of competition/insufficient number of bidders	1	2	3	15	25	3
e. Required skills or expertise are not available in the private sector	0	3	8	18	17	3
f. Belief that work can be performed more quickly using in-house staff	3	17	15	7	4	3
g. Belief that work will be of higher quality if performed by in-house staff	5	23	13	4	1	3
h. Concerns with liability or accountability for contracted work	0	3	7	23	14	2
i. Other reason(s)	4	2	0	0	1	9

Source: GAO survey results.

Table 13: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Construction Engineering and Inspection

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	11	9	7	9	7	2
b. Lack of in-house staff	29	10	5	1	0	0
c. To access specialized skills or equipment	7	12	10	13	3	0
d. To increase speed of completion or to meet specific time frames	1	11	11	16	6	0
e. To obtain cost savings	0	1	4	15	21	4
f. To maintain flexibility or manage variations in department workload	12	20	7	3	3	0
g. To identify innovative approaches or new techniques	0	4	5	18	16	2
h. Other reason(s)	0	0	3	0	1	9

Source: GAO survey results.

Table 14: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Construction Engineering and Inspection Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	12	1	9	15	9	2
b. Costs of consultants/contractors are greater than using in-house staff	11	19	10	3	4	1
c. The need to retain key skills and expertise in-house	18	16	10	2	1	0
d. Lack of competition/insufficient number of bidders	1	2	6	12	24	3
e. Required skills or expertise are not available in the private sector	1	6	8	17	13	3
f. Belief that work can be performed more quickly using in-house staff	3	9	13	12	7	3
g. Belief that work will be of higher quality if performed by in-house staff	8	16	9	9	4	2
h. Concerns with liability or accountability for contracted work	3	7	6	19	11	0
i. Other reason(s)	2	4	0	1	1	5

Source: GAO survey results.

Table 15: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Federal-Aid Eligible Preventive Maintenance Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	6	11	8	9	6	0
b. Lack of in-house staff	18	16	2	3	1	0
c. To access specialized skills or equipment	12	15	9	2	1	0
d. To increase speed of completion or to meet specific time frames	7	14	13	5	0	1
e. To obtain cost savings	4	6	4	18	6	2
f. To maintain flexibility or manage variations in department workload	7	12	15	4	1	1
g. To identify innovative approaches or new techniques	0	11	11	12	3	3
h. Other reason(s)	2	2	0	0	0	8

Source: GAO survey results.

Table 16: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Federal-Aid Eligible Preventive Maintenance Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	6	1	7	10	10	3
b. Costs of consultants/contractors are greater than using in-house staff	7	12	9	4	3	2
c. The need to retain key skills and expertise in-house	7	11	9	7	1	2
d. Lack of competition/insufficient number of bidders	0	4	5	10	14	5
e. Required skills or expertise are not available in the private sector	0	2	8	11	13	3
f. Belief that work can be performed more quickly using in-house staff	6	7	9	9	4	3
g. Belief that work will be of higher quality if performed by in-house staff	3	9	9	10	4	3
h. Concerns with liability or accountability for contracted work	0	4	4	15	12	3
i. Other reason(s)	1	0	0	0	1	9

Source: GAO survey results.

Table 17: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Routine Maintenance Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	4	5	10	6	15	1
b. Lack of in-house staff	20	15	4	1	1	0
c. To access specialized skills or equipment	7	16	9	4	3	2
d. To increase speed of completion or to meet specific time frames	7	12	13	5	4	0
e. To obtain cost savings	2	7	9	14	6	1
f. To maintain flexibility or manage variations in department workload	10	15	12	1	2	1
g. To identify innovative approaches or new techniques	0	4	15	12	8	1
h. Other reason(s)	0	2	0	0	1	8

Source: GAO survey results.

Table 18: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Routine Maintenance Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	6	3	6	15	14	0
b. Costs of consultants/contractors are greater than using in-house staff	7	17	11	7	1	2
c. The need to retain key skills and expertise in-house	11	17	11	4	1	1
d. Lack of competition/insufficient number of bidders	1	3	10	19	9	3
e. Required skills or expertise are not available in the private sector	1	5	14	14	8	3
f. Belief that work can be performed more quickly using in-house staff	7	17	12	6	1	2
g. Belief that work will be of higher quality if performed by in-house staff	5	13	16	7	2	2
h. Concerns with liability or accountability for contracted work	3	8	7	16	9	2
i. Other reason(s)	2	0	0	0	2	5

Source: GAO survey results.

Table 19: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Ongoing Operations Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	3	10	8	10	6	0
b. Lack of in-house staff	20	11	4	0	2	0
c. To access specialized skills or equipment	13	12	8	3	1	0
d. To increase speed of completion or to meet specific time frames	6	8	15	5	3	0
e. To obtain cost savings	0	3	11	11	11	1
f. To maintain flexibility or manage variations in department workload	7	10	11	6	3	0
g. To identify innovative approaches or new techniques	1	10	11	9	5	1
h. Other reason(s)	0	1	0	0	3	4

Source: GAO survey results.

Table 20: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Ongoing Operations Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	7	3	9	12	11	1
b. Costs of consultants/contractors are greater than using in-house staff	6	17	12	6	2	0
c. The need to retain key skills and expertise in-house	9	21	9	3	1	0
d. Lack of competition/insufficient number of bidders	0	3	5	16	15	4
e. Required skills or expertise are not available in the private sector	1	6	6	9	19	2
f. Belief that work can be performed more quickly using in-house staff	7	10	11	11	3	1
g. Belief that work will be of higher quality if performed by in-house staff	3	10	13	11	4	2
h. Concerns with liability or accountability for contracted work	2	5	6	18	11	1
i. Other reason(s)	3	0	0	0	2	5

Source: GAO survey results.

Table 21: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Contract Out Some or All Right-of-Way Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. To meet federal or state legislative mandates, legal requirements, or policy initiatives	8	7	7	11	15	0
b. Lack of in-house staff	31	13	1	3	0	0
c. To access specialized skills or equipment	9	17	12	6	4	0
d. To increase speed of completion or to meet specific time frames	20	19	7	0	2	0
e. To obtain cost savings	1	2	9	15	16	5
f. To maintain flexibility or manage variations in department workload	20	18	7	2	1	0
g. To identify innovative approaches or new techniques	3	2	8	14	18	2
h. Other reason(s)	0	0	0	0	4	8

Source: GAO survey results.

Table 22: Number of State DOTs Reporting the Importance of Various Factors in Their Decision to Use Department Staff to Perform Some or All Right-of-Way Activities

	Number of state DOTs, by importance of factor					
Factor	Very important	Important	Moderately important	Of little importance	Of no importance	No basis to judge
a. Legal restrictions or policy initiatives regarding the use of consultants or contractors	7	4	6	17	14	1
b. Costs of consultants/contractors are greater than using in-house staff	7	17	10	9	3	3
c. The need to retain key skills and expertise in-house	18	15	12	1	0	3
d. Lack of competition/insufficient number of bidders	0	3	12	17	14	3
e. Required skills or expertise are not available in the private sector	2	7	8	14	14	4
f. Belief that work can be performed more quickly using in-house staff	5	22	8	9	1	4
g. Belief that work will be of higher quality if performed by in-house staff	6	15	10	13	0	3
h. Concerns with liability or accountability for contracted work	0	10	5	17	14	3
i. Other reason(s)	0	0	0	0	2	9

Source: GAO survey results.

Table 23: Number of State DOTs Reporting Increasing, Decreasing, or Maintaining the Same Level of Contracting Out for Highway Activities over the past 5 Years

	Number of state DOTs, by changes in level of contracting out			
Activity	Increased	Maintained the same level	Decreased	Not sure
a. Preliminary engineering	26	21	3	0
b. Design	27	13	10	0
c. Construction engineering and inspections	27	15	6	0
d. Federal-aid eligible preventive maintenance	13	28	2	5
e. Routine maintenance activities not eligible for federal-aid program funding	13	32	1	2
f. Ongoing operations	15	24	4	3
g. Right-of-way - appraisals, acquisitions, and relocation	28	18	3	0

Source: GAO survey results.

Table 24: Number of State DOTs Anticipating Increasing, Decreasing, or Maintaining the Same Level of Contracting Out over the Next 5 Years

	Number of state DOTs, by changes in level of contracting out			
Activity	Increase	Maintain the same level	Decrease	Not sure
a. Preliminary engineering	9	30	9	2
b. Design	9	23	15	3
c. Construction engineering and inspections	7	27	11	3
d. Federal-aid eligible preventive maintenance	12	28	2	5
e. Routine maintenance activities not eligible for federal-aid program funding	10	31	5	2
f. Ongoing operations	9	30	3	3
g. Right of way - appraisals, acquisitions, and relocation	11	29	5	4

Source: GAO survey results.

Table 25: Number of State DOTs Using Broader Types of Contracting over the past 5 Years

	Number of state DOTs, by use of broader types of contracting		
Contracts	**0**	**1 to 10**	**11 and up**
a. Design-build	20	20	8
b. Design-build operate-maintain	30	3	0
c. Operations and maintenance management	30	7	8
d. Project-management	30	11	5
e. Construction manager/ general contractor	40	6	3

Source: GAO survey results.

Table 26: Number of State DOTs Using Alternative Bid Types and Techniques over the past 5 Years

	Number of state DOTs, by use of alternative bid types or techniques				
Bid type or technique	**Frequently**	**Occasionally**	**Rarely**	**Not at all**	**No basis to judge**
a. Lane rental	4	14	13	19	0
b. Cost + time (A+B) contracts	9	26	8	7	0
c. Multiparameter bidding, including quality (A+B+C)	1	7	8	34	0
d. Incentives/Disincentives provisions for early contract completion	17	29	1	2	0
e. Lump-sum bidding (no quantities)	6	8	17	19	0
f. Warranties	3	13	21	13	0
g. Other type(s)	1	4	2	1	5

Source: GAO survey results.

Appendix IV: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

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