Utah Department of Transportation

Project and Administrative Charges Management Performance Audit

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Utah Department of Transportation

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Management Performance Audit

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Executive Summary

A. Introduction

In recent years, the Utah Department of Transportation (UDOT) has gone through significant changes, including rightsizing of staff and decentralization of responsibilities. It also has made efforts to increase cost-effectiveness and accountability, in response to both a perceived need on the part of UDOT management, reports by the auditor general, and concerns voiced by the legislature. As part of this effort, UDOT is having a series of performance audits conducted. This report provides the results of a performance audit of UDOT's project and administrative charges. It addresses the following:

- Purpose of cost accounting and allocation.
- Approach to cost accounting and allocation.
- Management and accounting controls.
- Information systems and data sources.
- Approach to contractor charges.

B. Purpose of Cost Accounting and Allocation

Charges management is comprised of cost accounting and cost allocation. There are five main reasons for doing sound cost accounting and cost allocation:

1. Providing information required for decisions about the allocation of scarce resources.
2. Motivating UDOT personnel to monitor the use of resources and be cost-effective.
3. Supporting reporting to UDOT management, the transportation commission, the state legislature and the federal government.
4. Justifying costs and requests for reimbursement of expenditures.
5. Providing information for outsourcing decisions.

C. Approach to Cost Accounting and Allocation

There are three types of costs that must be allocated:

1. Direct costs of activities directly related to projects (e.g. preliminary engineering).
2. General administrative costs (e.g. central accounting, human resources).

3. Product support costs for activities that do not directly support individual projects but benefit more than one project (e.g. a standard design that will be used more than once).

UDOT allocates administrative and product support costs to projects proportionately through an indirect cost allocation plan. It was the first state to develop such a plan in the 1980s. The plan enables UDOT to receive federal reimbursement for costs related to product support activities for federal projects. In addition, the indirect cost allocation plan provides UDOT with a full cost rate that can be used to compare internal project costs with those of the private sector.

A 1994 UDOT directive states that indirect activities should be charged to overhead and not to projects. Review of over 200 timesheets indicates that staff appear to be following the direction. However, the directive has led to significant increases in indirect/overhead charges in some areas of the Department, which, in turn, has generated concern. To improve the accuracy of charges, the Comptroller has identified different types of activities to be charged to overhead and developed related codes.

The following are issues and recommendations in this area:

1. Issue: UDOT may not identify all of its products and services and, therefore, may inflate its overhead rate.

Recommendation:
- Identify and account for the UDOT services and products that currently are not clearly identified.

2. Issue: There is still misunderstanding concerning the definition of overhead activities.

Recommendations:
- Communicate, monitor, and evaluate use of the list of administrative/overhead activity codes developed by the Comptroller.
- Designate a staff person within the Comptroller's Office to field all questions and address problems regarding the guidelines.
- Determine whether some of the activities that are currently on the Comptroller's list should receive direct charge accounts.
- Develop a system of indirect activity codes that separates general administration from product support activities.

3. Issue: The indirect cost allocation plan is outdated and unnecessarily complex.

Recommendations:
- Complete ongoing efforts to simplify the cost allocation program.
Complete ongoing efforts to move from a focus on individual positions in the indirect cost allocation plan to a focus on eligible business lines.

D. Management and Accounting Controls and Strategies

Since the auditor general's report, UDOT has carried out several major new initiatives to provide greater cost and accounting control over its projects. These include:

1. Implementing a Preconstruction Program Management System (PPMS).
2. Requiring all project design engineers to establish a project budget for all preconstruction phases of a project, including concept development.
3. Implementing a policy regarding indirect charges.
4. Increased training and support for managers with questions or concerns regarding charges management.
5. Planned implementation of a project management function that will provide for a “cradle-to-grave” approach to project management.

These efforts were not completely implemented as of this writing. The almost simultaneous implementation of a new financial system (PI-NET) and PPMS and the need for changes to the Maintenance Management System (MMS) have created a situation where managers are learning to deal with a large amount of new information or must understand new formats for information that was previously received. Issues and recommendations include:

1. Issue: Managers believe that they lack the information and sometimes skills required to manage and contain costs effectively.

   Recommendations:
   • Provide training to help managers understand the information that is available.
   • Expedite efforts to implement a project management function.

2. Issue: UDOT does not yet have full cost control and accountability.

   Recommendations:
   • Develop productivity measures and standards as part of the move to performance-based budgeting and management.
   • Develop accountability standards for managers.
   • Develop chargeability standards for professional staff positions within the Department.
• Develop an incentive system that rewards managers and staff who are particularly successful in containing costs.

E. Information Systems and Data Sources

UDOT uses a number of different management systems providing managers with information required to adequately monitor charges and allocates resources. The three main systems include:

1. FI-NET, the statewide financial management system providing budget information.
2. The Preconstruction Program Management System (PPMS) providing payroll, funding, and project scheduling information for the preconstruction phases of projects.
3. The Maintenance Management System (MMS) providing average cost, scheduling, and performance information for maintenance activities.

Information from FI-NET can provide much of the information required to monitor charges and control project costs. However, managers are not familiar with all report formats and information provided by the system. PPMS covers the preconstruction but not construction phases of projects. Both the MMS and FI-NET can provide useful maintenance information, but there are currently reconciliation problems between them. Issues and recommendations include:

1. Issue: Managers do not yet view FI-NET reports as meeting their needs.

Recommendations:
• Provide additional FI-NET training to managers.
• Expedite current efforts to provide FI-NET information in report formats that are easier to use.
• Provide managers or accounting staff in the regions and organizational units with the ability to generate their own reports.
• Expedite current plans to dedicate staff within the Comptroller’s Office to work with regional accounting staff and managers to develop customized reports.
• Provide the ability to correct FI-NET input errors as soon as possible.

2. Issue: Managers and staff have difficulty understanding and reconciling information between FI-NET, MMS, and PPMS.

Recommendations:
• Provide managers and staff with a description of the roles of MMS, PPMS, and FI-NET in providing management and accounting information.
• Simplify data access to these systems through an executive information system, data warehouse, or other capability.
• Expand the PPMS or develop a similar system to cover all project phases.
• Review the data transfer between MMS and FI-NET to eliminate unnecessary duplication of information.
• Review current MMS and FI-NET data entry and passage processes to minimize timing problems.
• Evaluate the necessity of the error holding file for maintenance data.
• Identify the data requirements for a performance-based budgeting.

F. Contractor Charges

UDOT retains outside assistance because it does not have sufficient staff to carry out work, does not have the experience or knowledge required for a specific project, or needs an independent perspective. UDOT has made progress in addressing contractor cost control problems; however, there are still issues that require attention. Following are issues and recommendations:

1. Issue: Cost control on consultant/contractor projects has been a problem.

Recommendations:
• Give managers the information they need to track project budgets closely.
• Proceed with current efforts to develop and implement a project management function.
• Track contractor performance on projects and include a review of previous performance in the selection process.
• Conduct a more thorough review of changes to project costs to evaluate their validity.

2. Issue: UDOT managers are not always able to determine whether a project should be carried out in-house or by a consultant/contractor.

Recommendation:
• Take a full cost approach to compare the cost of in-house vs. outsourced work.

3. Issue: UDOT must maintain the knowledge, experience, and technical skills required to develop and monitor contractors to ensure cost control.

Recommendations:
• Develop a project history database.
• Take steps to maintain in-house capabilities in areas that are critical to UDOT’s business.
I. Introduction

During the last decade, the Utah Department of Transportation (UDOT or Department) has gone through significant change. Like other DOTs, the Department made an effort to adjust staffing levels to a changing political and fiscal environment, a process during which many experienced senior staff members left the Department. UDOT also carried out a major decentralization effort that provides the Department's regional and district offices with broad decision-making authority. In recent years, UDOT has made a significant effort to increase cost-effectiveness and accountability, in response to both a perceived need on the part of UDOT management and to concerns voiced by the legislature.

A 1995 review of UDOT projects by the legislative state auditor general revealed that at that time, there were problems with insufficient control of both internal and external charges. Also in 1995, the Department began implementing a new Preconstruction Program Management System (PPMS) and migrated from the FIRMS financial management system to the new statewide system, FI-NET. Implementation of FI-NET, in turn, required adjustments to the Department's existing Maintenance Management System (MMS) that proved to be significant.

To address these concerns and changes, UDOT is reviewing its ability to manage charges and to provide cost-effective services and products to Utah's citizens. This report provides the results of a performance audit of the UDOT's project and administrative charges and recommends improvements.

The performance audit addresses the following:

- Purpose of cost accounting and allocation.
- Approach to cost accounting and allocation.
- Management and accounting controls.
- Information systems and data sources.
- Approach to contractor charges.
II. Purpose of Cost Accounting and Allocation

Charge management requires accurate cost accounting and allocation. Before the evaluation of UDOT’s current cost accounting, allocation, and charge management efforts, it is useful to summarize their purpose. There are five main reasons for accurate cost accounting and allocation:

1. **Providing information required for decisions about the allocation of scarce resources.**

   Accurate accounting of the use of UDOT’s resources supports the Department’s efforts to program and budget the use of future resources so that they provide the greatest benefit to Utah’s citizens. This includes, for example, decisions about the design of a needed facility, the right of way it may require, and how environmental issues should be addressed.

2. **Motivating UDOT personnel to monitor the use of resources and be cost-effective.**

   Good information on how UDOT resources are spent helps managers to monitor and direct staff and equipment use and minimize the rate of growth for overhead costs.

3. **Supporting accurate reporting to UDOT management, the transportation commission, the state legislature, and the federal government.**

   In order to receive state and federal funds, the Department is required to report on how it uses these resources. This also means that UDOT must comply with generally accepted accounting principles that allow Department management, the transportation commission, the legislature, or the federal government to determine whether the funds were spent appropriately.

4. **Justifying costs and requests for reimbursement of expenditures.**

   Like other transportation departments, UDOT spends state funds on projects and services that are eligible for federal funding and is reimbursed for these expenses based on its cost accounting. At the state level, accurate cost accounting will help the Department in successfully requesting funding from state sources.

5. **Providing information for outsourcing decisions.**

   Changes in the department’s staffing levels and budgetary considerations make it imperative for the department to establish a competitive position and to determine when it would be more cost-effective for UDOT to carry out work in-house or retain consultant or contractor assistance. This is possible only if costs can be compared on an equal basis.
III. Approach to Cost Accounting and Allocation

The ability to properly account for the costs that UDOT incurs is an important factor in the allocation of the resources that support the Department’s activities. To do so, the Department must be able to distinguish between costs that are directly related to its products (projects) and those that support UDOT’s products or services only indirectly. In addition, indirect costs must then be distributed proportionately to projects to reflect the full cost of completing them. This means that there must be clear definitions of and distinctions between those activities that directly support projects or services and those that are indirect. It also means that the Department must identify all of its products and services correctly to be able to determine their direct and indirect costs.

A. Definition of Direct and Indirect Costs

Activities carried out by UDOT staff can be grouped as follows:

1. **Direct**: Activities that directly contribute to completing products or services that the Department provides include, for example, activities that are part of preliminary engineering and construction engineering, purchase of right of way, highway planning and research efforts, or the distribution of federal transit funds to small urban and rural transit systems. UDOT maintains listings of activities directly supporting projects and services that allow staff to charge their time to these projects and services.

2. **General Administration**: Activities carried out by organizational units that support the Department as a whole, such as human resources, administrative services, or general accounting. This also includes support activities in the regions, such as the regional or group directors, regional or organization accounting staff, or secretarial support.

3. **Product Support**: Activities of UDOT staff that are not directly related to any single product or service but benefit a number of different projects. These include, for example, developing a standard design, participating in training on a new CAD program, or evaluating contractors who would like to be included in the contractor’s pool.

General administrative and product support activities taken together comprise indirect or overhead costs. Direct and indirect costs combined constitute full costs. Figure 1 illustrates this relationship. In order for UDOT to make this distinction, however, the products and services provided by the Department must be accurately defined. If they are not, activities that support undefined products will be included in the overhead.
example, UDOT regional offices regularly assist local jurisdictions with questions regarding the potential impact of new developments or other transportation-related issues. However, if this assistance is not directly related to a project to which UDOT has allocated funding, the cost of the effort will be treated as overhead although it is a service or product provided by the Department.

These considerations are not only important for the Department if it wants to determine the cost of a project, product, or service accurately; they are also required to qualify for reimbursement of expenditures on projects eligible for federal funding.

**Figure 1**  
Cost and Charge Categories

- **General Administration**
- **Product Support**
- **Direct**
- **Indirect/Overhead**
- **Full**
B. Current Situation

1. Federal Cost Accounting and Allocation Requirements

More than a decade ago, Utah was the first state to implement an indirect cost allocation plan that identifies direct and indirect activities. The plan also separates the costs of activities that are indirectly related to federal projects and eligible for federal reimbursement from indirect costs that are not reimbursable. In general, activities that benefit a federal project are eligible for federal reimbursement while purely administrative activities are not.

Much of UDOT's approach to define, identify, and allocate direct and indirect costs is based on federal requirements for the reimbursement of expenditures on federally funded projects and services. Today, there are still a significant number of states that do not develop the information required for federal reimbursement of indirect costs. In a recent American Association of State Highway and Transportation Officials (AASHTO) survey, 16 of 32 responding states indicated that they do not prepare an indirect cost allocation plan.

Federal Highway Administration (FHWA) reimbursement is based on Title 23 of the federal code. Title 23 expressly excludes general administration, supervision, and other indirect charges from reimbursement and states in 23 CFR §1.11 that "Costs of engineering services performed by the state highway department may ... be eligible only to the extent that such costs are directly attributable and properly allocable to specific projects." On the other hand, Title 23 allows states to request reimbursement for charges related to activities that are not directly related to one project but are needed to administer federal funds or that benefit projects funded from federal sources. This distinction of the types of activities that are eligible for federal reimbursement requires the Department to identify and quantify direct costs as well as different types of indirect costs to determine those that are eligible for federal reimbursement.

To make this distinction, UDOT's indirect cost allocation plan defines 34 indirect cost centers that include all Department activities and identifies costs that are eligible for federal reimbursement under Title 23. The plan also provides information on the indirect costs of activities that would be eligible under the Office of Management and Budget's Circular A-87, which contains the requirements for reimbursement for most federal funds that are not distributed by FHWA. This is used for projects such as those that the Department may carry out in national parks or for the Bureau of the Interior. In addition to the costs of product support activities, this approach also includes the cost of general administration, as illustrated in Figure 1. This approach takes into account the full costs of doing business and allows for the development of
a full cost overhead rate that can be used to compare UDOT’s costs with those of the private sector.

Cost allocation has helped UDOT recover costs that are incurred for the benefit of more than one federally funded project. While this approach does not increase the federal funds that the state receives, it does provide for earlier reimbursement and frees state funds for other projects. Based on the most recent indirect cost plan submitted to FHWA, 15.1 percent of labor charges made within the Department are indirect charges that are eligible for federal reimbursement under Title 23. The full cost overhead rate for UDOT, which includes all indirect costs and benefits, is at 166 percent of direct labor costs.

2. Internal and Statewide Cost Accounting and Allocation Requirements

In addition to federal regulations related to the separation of certain types of indirect costs from direct costs, UDOT applies internal and state policies and guidelines.

a. Guidelines regarding charging of indirect costs

In November 1994, the Department clarified its policies on charging direct and indirect costs. This was in a memorandum from Clint Topham, the Deputy Director of the Department, that stated that all staff should always charge time to the exact activity on which they have been asked to work. In a summary fashion, it also laid out which costs should be charged directly to projects and which should be charged to overhead. It included a list of activities that are indirect:

1. Time spent developing/drafting standard drawings.
2. Time spent preparing time sheets.
3. Training that is not eligible for federal reimbursement.
4. Quality improvement training/teams, etc.

The memorandum was distributed to all UDOT staff. In addition, in early 1996, the Comptroller’s office carried out department-wide training for staff to facilitate understanding and implementation of the policy in the field. With the exception of some staff engaged in construction work in the field, the training was available to all UDOT staff.
b. General guidelines

With the implementation of FI-NET in 1995, UDOT's Comptroller issued guidelines concerning the accounting of costs and charges. Since the Department provides its regions and organizational units with broad decision making authority, the guidelines were based on fairly broad principles but clearly indicated that staff should identify and record the time spent on activities that are not directly related to products or projects. They did not specifically define these activities or require staff to record these indirect activities. Since the policy was implemented, some organizational units have developed their own definitions and descriptions of the indirect charges.

C. Issues, Findings, and Recommendations

1. Issue: UDOT may not identify all of its products and services and, therefore, may inflate its overhead rate.

   a. Findings:

   - UDOT has identified all activities that are directly related to projects and charged to projects very clearly. Much of this is based on requirements for federal reimbursement, and we do not see that any changes are required.

   - UDOT provides a variety of services and products to Utah’s citizens, local governments, and the business community. However, the definition of products, at least with regard to highways, is closely related to actual physical highway projects. While this is and will always be a central part of UDOT’s mission, it does not appear to capture all other tangible products and services provided by the Department. This may be, in part, because the basis for the current cost allocation structure was developed at a time when the Department’s mission was focused on building highway infrastructure. Today, it is a multimodal agency that has responsibilities that go beyond the provision of new highway infrastructure. This should be reflected in how the Department defines its products and services and determines the direct and indirect costs of doing business. The determination of all products and services provided by the Department is also a prerequisite for performance-based budgeting.

   - The Comptroller’s Office recently polled regional and division offices to develop a listing of activities that can help UDOT management to more...
precisely identify the types of activities now charged to overhead. The information gathered for this effort indicates that there are activities that are directly supporting UDOT products that are currently not identified. This includes a variety of different types of customer assistance or responding to requests from local governments and other public agencies that are not clearly related to projects.

b. Recommendations:

- Identify and account for the UDOT services and products that currently are not clearly identified:
  - Integrate the effort to introduce performance-based management with the identification of additional products and services. The Department is currently in the process of developing and implementing performance measures that will eventually enable UDOT to move to performance-based management and budgeting. At this writing, UDOT staff are developing performance measures and standards for all units of the Department. This effort should include the identification of all products and services that the Department provides and development of performance measures and standards for these.
  - Based on this effort, expand the current set of products and services and code the activities accordingly.

2. Issue: There is still misunderstanding concerning the definition of overhead activities.

a. Findings:

- Managers in the field are aware of the policy regarding indirect charges and support it. Generally, managers want to ensure that their staff charge accurately. Our field interviews and review of about 200 individual timesheets indicate that staff are making an effort to comply with it. They charge activities that are not directly project-related as overhead.

- During our interviews, however, some managers indicated that they lack the necessary training to adequately implement the policy with regard to charging to overhead because they are not quite clear as to which activities are to be charged to indirect. This is despite the fact that Department staff received training on cost allocation policies and procedures. This is true in
particular for construction staff who did not have a chance to participate in the training to the same extent as other Department employees. We have found some significant differences in the level of overhead time or cost to overall work time or expenditures across regions and within other organizational units in the Department.

- Field managers indicated that they would like a more precise break down of activities to be charged to indirect. The Comptroller's Office has been hearing from managers since the memorandum was written and the training conducted earlier in 1996.

- Some managers have implemented their own coding systems to more accurately track the non-project charges of their staff because they are concerned about high indirect charges. These activities and codes listed have varied among managers providing the same function in different regions.

- In response to concerns from the field about overall levels of overhead, the Department has recently developed more detailed definitions of administrative or overhead activities and developed codes that will allow managers to track these activities. In developing the codes, the Comptroller has used input from managers who had previously developed their own codes. The new codes were kept simple to make them easy to use. The listing covers six distinct groupings of activities to be charged to overhead. It has received positive comment from managers during follow-up interviews.

b. Recommendations:

- **Communicate, monitor, and evaluate use of the list of administrative/overhead activity codes developed by the Comptroller.** The list is now available for use throughout the Department. Over the next 12 months, monitor use of the list throughout the Department and poll managers at the end of the time period to determine whether the current groupings and codes provide managers with the information they need. Review any additional detail or codes developed by managers to determine whether the current list should be revised.

- **Designate a staff person within the Comptroller's Office to field all questions and address problems regarding the guidelines.** This will help ensure a consistent approach for all organizational units and regions. The
Comptroller has already assigned a staff person to deal with these issues but staff has not yet begun work.

- **Determine whether some of the activities that are currently on the Comptroller’s list should receive direct charge accounts.** Above we have already indicated that UDOT does not identify all its products and services clearly and suggested a review. It appears that some activities under the category “Customer assistance, interagency requests, local governments” may be supporting actual products and services. If that is the case, they should be taken from the list of overhead activities and be charged directly. The Department may choose to implement direct charge accounts for these products and services once the scale and cost of providing these products and services is established.

- **Develop a system of indirect activity codes that separates general administration from product support activities.** With the exception of activities that are eligible for federal reimbursement under Title 23, UDOT currently does not separate product support from general administrative activities. We suggest that, after evaluation of the use of the new list of overhead activity codes, UDOT develop a coding structure that allows the Department to monitor the cost of product support and general administrative activities separately. A recent report on cost and reporting standards of state departments of transportation by AASHTO indicates that this approach will be in concurrence with AASHTO’s current efforts to define common costing guidelines and reporting formats for transportation agencies.

3. **Issue: The current indirect cost allocation plan is outdated and unnecessarily complex.**

   a. **Findings:**

   A review of the current indirect cost allocation plan identified the following issues and findings:

   - The indirect cost allocation plan program is very complex. Currently, the indirect cost allocation plan is based on an electronic spreadsheet-based program that was developed in the 1980s. While the plan appears to be well documented, its basic set up with five iterations of cost allocation to all 34 active indirect cost centers is very complex and may not be needed. The extractions from the state financial system and inputs into the plan require
significant detail and are performed manually. The amount of time and effort needed to update and maintain the indirect cost allocation plan is greater than actually required.

- UDOT staff acknowledge that the current approach is complex and are working with a representative of FHWA to simplify the approach. This applies to both the number of iterations the program goes through in allocating charges and the actual determination of eligibility of charges. UDOT staff indicate that the next version of the indirect cost allocation plan will go through fewer than five iterations. It will also have less of a focus identifying individual positions but rather establish eligibility for federal reimbursement along business lines. These changes would reduce the amount of time and effort required to update and maintain the indirect cost allocation plan.

- Staff in the Comptroller’s Office are considering discontinuing the breakout of eligible indirect charges under Title 23 entirely. This is because compliance does not provide for any additional federal funds. They are concerned that the benefit may not warrant the effort that goes into separating the eligible charges from overall overhead. UDOT would still track indirect costs but may move to a cost allocation approach that more closely fits its own information needs rather than federal requirements.

b. Recommendations:

- Complete ongoing efforts to simplify the cost allocation program. Based on our interviews, we understand that the program for indirect cost allocation is based on the capabilities of the software available at the time it was developed. It requires manual data entry for each iteration. Contemporary software allows the data for each iteration to be entered automatically, saving considerable time and reducing the potential for errors. In addition, the current plan goes through five cost allocation iterations during which costs are allocated to all costs centers. Contemporary cost allocation plans use two to three iterations, simplifying the process significantly. We recommend that the indirect cost allocation plan be updated and simplified to reflect the state-of-the-art. UDOT staff is already working on simplifying the approach in consultation with a FHWA representative.

- Complete ongoing efforts to move from a focus on individual positions in the indirect cost allocation plan to a focus on eligible business lines. The current indirect cost allocation plan includes a very detailed listing of
staff positions within the Department that are performing work that is eligible for federal reimbursement. UDOT staff are currently working to simplify the roll-up into indirect cost centers by focusing on business lines and function rather than a review of individual positions. We suggest that the Department complete this effort to simplify determination of eligibility and inclusion into the indirect cost allocation plan. This approach can also be used to distinguish between indirect costs related to product support activities and general administrative activities.
IV. Management and Accounting Controls and Strategies

Another important factor in ensuring that costs are allocated properly to projects and products is the management and accounting controls and strategies that the Department employs to monitor and remedy any errors that may occur.

A. Current Situation

1. General Overview

The UDOT has a decentralized organizational structure, giving management at central organizational units and regional offices a great deal of decision making authority. This includes control of accounting for all expenditures. These organizational units and regions input their own financial information into the FI-NET system and review reports returned by FI-NET for accuracy. For maintenance and preconstruction activities, the Maintenance Management System (MMS) and Preconstruction Program Management System (PPMS) provide performance and work flow information that helps managers in the field utilize staff and equipment resources efficiently.

There is no "official" monitoring point that reviews budget data for correctness or appropriateness above the division or region itself. However, the budget and cash management group in the Comptroller's office is fulfilling that role on an informal basis. Its staff will follow up with those organizational units whose financial reports show easily recognizable irregularities. Thus, the Comptroller's Office provides limited review to determine whether charges are reasonable. It carries this activity out to support, not monitor or control the budgets of UDOT's regions or other organizational units.

2. Major New Initiatives

Since the 1995 auditor general's report, UDOT has carried out several major new initiatives to provide greater cost and accounting control over its projects. They include the following:

1. UDOT has implemented its Preconstruction Program Management System (PPMS) which helps managers in the preconstruction phases of a project to
develop a staff hour budget and work plan for all required activities. The system also provides information for work flow management and budget review.

2. All project design engineers now must establish a project budget for all preconstruction phases of UDOT project, including concept development. Staff can charge to a project only after the project has been given a job/project number and the number has been activated. Only activities that have been indicated as necessary can be charged to the project.

3. UDOT has implemented a policy regarding charges for indirect activities that clearly indicates that only activities directly related to a project should be charged to it.

4. The Comptroller's Office has increased training and support for managers with questions or concerns regarding charge management. It has assigned one staff person to assist field managers and regional accounting staff in resolving questions regarding charge management and provide assistance in developing financial reports that provide the information required for charges management.

5. The Department is in the process of implementing a project management function that will provide for a "cradle-to-grave" approach to project management. Implementation will include training of project managers and a review of the existing information and related systems available to support project management. UDOT is currently in the consultant selection process for this effort.

However, all of these efforts were not completely implemented as of this writing. The almost simultaneous implementation of FI-NET and PPMS and the need for changes to the MMS have created a situation where managers are learning to deal with a large amount of new information or new formats for information that was previously received. Despite efforts on the part of the Department to provide managers with training that assisted them in understanding the information from these new or revised systems, managers in the field still feel a lack of knowledge and understanding which makes control difficult.
B. Issues, Findings, and Recommendations

1. Issue: Managers believe that they lack the information and sometimes skills required to manage and contain costs effectively.

   a. Findings:

   - Our interviews indicate that managers currently do not feel that they have the information required to manage projects and contain costs:
     - Managers find it difficult to understand FI-NET reports and indicate that they feel they do not provide the project and budget information that can help them detect problems with a project or activity that is directly chargeable.
     - Managers perceive a lack of adequate information in particular with regard to budget-to-date or comparative information that would help them determine whether they need to take action to make their staff more productive. This is despite the fact that the financial system provides this information at least in summary fashion.
     - Like many other departments of transportation, UDOT has during the last decade gone through an effort to right-size its staff. This has led to the loss of senior managers with a high level of skill, knowledge, and experience. A hiring freeze for engineering staff that was in place for about a decade has compounded this problem because there was no intermediate level staff who could grow into the positions vacated by senior staff taking early retirement. According to one interviewee, in some instances this has led to cost overruns on projects that could have been avoided if the manager had been more experienced. This was also mentioned as an issue in the auditor general’s report with regard to contract writers. Our interviews with both staff in the field and at headquarters indicate that this is still a valid concern with regard to some managers.

   b. Recommendations:

   - Provide training to help managers understand the information that is available. Managers need training that shows which data and tools are available to acquire the information required for effective management.
Assist managers in understanding existing reports and in developing new report formats that are better suited to their information needs.

- ** Expedite efforts to implement a project management function.** The UDOT has recognized the need for improved coordination across the different phases of a project. It is in the process of developing a project management function that will provide for this continuity. During this effort, it will be critical to review and improve the tools and information available to project managers and make improvements as necessary and provide training to develop project management skills. The Department is currently establishing a team to provide support in establishing a project management function and training.

2. **Issue: UDOT does not yet have full cost control and accountability.**

   a. **Finding:**

   - During the last two to three years, the Department has taken major steps to control costs and to make managers accountable for the budgets they control. However, while some managers have actively embraced the Department's efforts to become more cost-effective and efficient, other managers are reluctant to accept this concept. This is in part because managers do not feel that they have the tools and information to manage efficiently. It is also a change in the culture of the Department which previously was focused on the provision of infrastructure without major emphasis on cost containment.

   b. **Recommendations:**

   - **Develop productivity measures and standards as part of the move to performance-based budgeting and management.** The Department has begun an initiative to implement performance-based budgeting and management. We recommend that the Department develop productivity measures as part of that effort. (Along with other measures such as outcome measures.)

   Productivity measures indicate how much of an given resource input (e.g. staff, materials, dollars) is needed to produce a given amount of output (e.g. a bridge design or a new freeway interchange.) The approach could be similar to that used for maintenance through MMS. By having such
measures, UDOT management can set performance standards for productivity and monitor the extent which those standards are met. Management can use this information to assess performance of different parts of the organization, reward performance and take action where necessary. Where possible, the Department can obtain similar performance data from other state departments of transportation or the private sector to gain insight into reasonable performance standards and accomplishments.

- **Develop accountability standards for managers.** In addition to performance standards and measures that can be applied to whole organizational units within the Department, more detailed measures could be used to evaluate management skills. Such measures could, e.g. for a construction manager responsible for construction of a new interchange, include:

  - Was the interchange built within the planned time frame?
  - Did it come in within budget based on the partial/final estimate?
  - Is the documentation on the project complete and accurate?
  - What is the feedback from the contractor on the job?

- **Develop chargeability standards for professional staff positions within the Department.** In the private sector, most consulting firms carrying out planning and design work require their professional staff to devote a certain percentage of their work time to directly chargeable activities. During a performance review, the ability of the employee to be productive and billable is an evaluation criterion. For example, a design engineer in the early stages of his or her career without any management or marketing responsibilities might be required to bill about 95 percent of his or her time to client projects. On the other hand, a more experienced engineer who manages junior staff, markets the company's services, and writes proposals may be expected to spend at least 40 or 50 percent of his or her time on project work that can be charged directly. A general rule of thumb for engineering consulting firms is that all professional staff taken together should spend about 80 percent of their time on work that can be billed to client projects. UDOT may want to consider developing a similar approach for its non-management professional staff.
• Develop an incentive system that rewards managers and staff who are particularly successful in containing costs. There are a variety of different ways to reward staff who take care in containing costs. Incentives can range from simple recognition in the Department newsletter to awards to financial bonuses. For managers, successful management could be part of the criteria for promotion or a raise. For staff, the Department may recognize an innovative design that saves the Department money. A manager may be rewarded for taking measures to reduce the time of his construction staff during the winter. UDOT management has begun some selected efforts to promote rewards. This should be expanded.
V. Information Systems and Data Sources

Another important factor in the ability of the Department to manage charges and costs is whether its information systems provide for accurate and timely information. The following outlines the information systems available to the Department and evaluates their contributions to providing UDOT management with the information required to adequately monitor charges and allocate resources.

A. Current Situation

The Department uses three main information systems and two subsystems to store and provide cost information.

1. Statewide Financial Management System

FI-NET was introduced in July of 1994 as the state’s financial management system. It is a modified version of the American Management Systems’ (AMS) Government Financial Systems package (GFS). UDOT migrated in July of 1995 to FI-NET. It is a mainframe system that collects and maintains financial and payroll information from all state agencies in Utah. UDOT receives information from FI-NET in three formats:

1. Hard copy reports that are generated by the system. This includes a number of different types of reports.

2. General ledger current information that can be accessed via OLG+. This allows managers to query transactions and download information from FI-NET to complement the existing reports or review transactions that may be erroneous.

3. Sybase tables that currently contain all UDOT transactions posted to FI-NET to date. The Division of Finance downloads FI-NET information on a daily basis. The downloaded file therefore contains budget-to-date information on all projects that were entered into FI-NET. Access to the Sybase tables is online. Smart Stream, a newly acquired software package allows UDOT managers to download current financial information and to compile their own reports.
2. Preconstruction Program Management System (PPMS)

PPMS consists of four different modules and a reporting function. The modules are:

1. Payroll — The PPMS payroll module serves to track labor hours of both Department and contractor staff for all UDOT projects during the concept development and design phases of project development. Staff working on projects enter the code identifying the organizational unit for which they carry out the work, the project they are working on, the cost center to which the labor expenditure should be charged, and the activity for which the charge occurred. Activity codes are fully compatible between PPMS and FI-NET. Data entry is real time and online. PPMS allows online review of charges to a project, therefore managers can always determine whether there have been proper billing activities to a project.

The system generates a biweekly payroll report (T80) that is reviewed by the employee and his or her immediate supervisor. This information is then entered by a payroll clerk into FI-NET to generate accounting information. Currently, there is no electronic link between the payroll module of PPMS and FI-NET although PPMS has the capability to generate files for direct electronic input into FI-NET. UDOT is awaiting approval from the Finance Division to start testing file transfer.

2. Funding — The PPMS funding module tracks all federal appropriation codes and funds to ensure that all federal funds are spent consistent with federal requirements. PPMS allows UDOT staff to report on the financial status of federal projects and provides a running balance of federal obligations.

3. Single project resource estimating and scheduling — The PPMS single project scheduling module allows the project design manager to enter basic design characteristics for a project. The system then generates a project work schedule and provides information on which activities need to be accomplished and how many work days and hours will be required to complete each activity. The system allows the project design engineer to override the estimates if he or she feels that the estimates are not valid. This module assumes unlimited resources, no competition for resources from other projects, and calculates the soonest date by which a project could theoretically be produced — in other words, it provides a best case scenario. UDOT is currently in the process of reevaluating the processes that comprise activities to be completed. This is an effort that the Department goes through on a fairly regular basis to ensure that the processes described account for current practice, technology, and tools. During 1997, UDOT will also evaluate the standards used by PPMS in determining the number of days and hours it will take to complete an activity.
4. Multiple project resource estimating and scheduling — The PPMS multiple project schedule assumes limited resources and competing multiple projects. Based on a heuristic model, it allocates resources based on a late start date for each activity based on critical path. The module provides a prioritized work schedule for every work group in the design area. This would, for example, include any construction engineers that are available for design work during the winter months. The schedule indicates the project, the hours per activity, and when the activity has to be completed. The system informs managers when all staff are booked and allows managers to evaluate the need for consultant assistance. UDOT's long term goals is to develop the ability to project which projects will be advertised for each quarter of a given year. (Currently, the Department is projecting which projects will be advertised within a given year and is documenting the results.)

An important feature of PPMS is the ability of the system to provide management information on the status of a project. PPMS has about 400 different screens that can be reviewed online by project managers in the field. UDOT has also defined 24 different types of reports, 20 of which are produced on a monthly basis. Depending on the level of management, they are available as a package to first line (project) managers, regional managers, and upper management.

3. Maintenance Management System (MMS)

UDOT has had MMS for several years before implementation of FI-NET. UDOT's MMS provides average cost information for all maintenance activities carried out by the Department. It provides maintenance managers with scheduling information that allows them to adjust crew sizes and work flow. It can also be used to monitor the performance of UDOT's maintenance stations and work crews. The timeliness of this information is critical for the ability of maintenance managers, especially with regard to activities where materials are a large cost factor.

Maintenance staff at the stations prepare daily reports of labor, equipment use, and materials for each staff person which they load into their personal computers. All maintenance station input is merged at the region level. Based on this information, estimated average labor, materials, and equipment rates information is fed back to the personal computer for the managers and the full merge (T91) is passed on to the mainframe. Currently the information is updated twice per week.
4. Other Information Systems

In addition to these major systems, UDOT uses an equipment management system that tracks the use and rental of equipment owned by the Department, and an accounts receivable management system, that maintains information on receivable open items and payable contracts for highway contractor and consulting engineering companies working on projects.

B. Issues, Findings, and Recommendations

1. Issue: Managers do not yet view FI-NET reports as meeting their needs.

   a. Findings:

   - Our research indicated that the information contained in FI-NET and the Sybase table containing historical information can provide managers with much of the project cost information they need. This includes both project-to-date information and information across different phases of a project. However, some managers have indicated that they find it difficult to understand the information in the format in which it is currently provided and sometimes indicate that specific data, like the percentage of project expenditures for engineering, do not exist. Staff in the Comptroller's Office are aware of the problem and have indicated that they are in the process of developing a report format that provides better information. The office will also dedicate a staff person to assist field managers and region accounting staff in developing customized reports and other materials to support project management.

   - Pending implementation of these plans, our interviews indicate that the following is the current situation:

     - UDOT managers are not uniformly familiar or comfortable with the information provided by existing FI-NET reports. Some managers indicate that the information is difficult to understand and does not meet their information needs entirely. Some managers therefore appear not to look at the reports at all.

     - The Smart Stream software package is available for managers who want to develop their own reports from the Sybase table of
downloaded FI-NET data or work with regional accounting staff to develop that information. However, our interviews indicate that few managers are aware of this option. From one regional accounting staff person familiar with the option, we have heard that it is currently not practical to use it because the hardware configurations in this UDOT regional office make the downloading process cumbersome and time consuming. Our interviews with UDOT and Division of Finance staff have indicated that the latter is an issue that was recently resolved.

• The Smart Stream software requires a relatively high level of expertise and experience. UDOT staff, even accounting staff in the regions and organizational units, do not believe they have been trained adequately for the use of the software. The Comptroller's Office is aware of this problem and is taking steps to remedy it. One staff person will be dedicated to assist regional accounting staff in developing reports from the downloaded FI-NET database that will provide managers with the information they need or request.

• Managers are concerned about the accuracy of data in FI-NET and believe that it is difficult to identify mistakes. This is despite the fact that all timesheets are reviewed and signed by managers before they are entered into FI-NET. Managers feel that it is difficult to track charges and identify mistakes.

• Once mistakes are identified, managers find it difficult to determine whether they have been corrected. They indicate that they cannot be sure that it really was fixed. One manager indicated that sometimes mistakes get “corrected” more than once because it is difficult to keep track of these changes to the database.

b. Recommendations:

• Provide additional FI-NET training to managers. Managers in the field have indicated that they would find more training on FI-NET and the information that it can provide useful. The training should include an overview of the different types of reports that are available and the information that they contain. It should also provide guidance on techniques that can be used to detect errors in FI-NET data and show the process that is used to correct them.

• Expedite current efforts to provide FI-NET information in report formats that are easier to use. Staff at the Comptroller's Office are
working to develop and implement report formats that allow tracking of project costs and better project management. They intend to use the database that is downloaded daily from FI-NET to a Sybase environment that can be accessed online.

- Provide managers or accounting staff in the regions and organizational units with the ability to generate their own reports. In the long run, it may prove useful to enable regions and organizational units to use the Smart Stream software package to develop their own reports from downloaded FI-NET data. This will require training the staff who will use the software—at a minimum this should include accounting staff in the region and district offices. UDOT should ensure that there is at least one personal computer in each region and division that has the hardware configuration (RAM and modem speed) required to make the use of Smart Stream practical and effective.

- Expedite current plans to dedicate staff within the Comptroller's Office to work with regional accounting staff and managers to develop customized reports. The Comptroller has already identified a staff person who will serve as a resource to both accounting staff in the regions and managers who request information in a specific format to support decision making and project monitoring. Over time, this approach is likely to lead to the development of a set of report formats that will meet UDOT managers' most pressing information needs. It will also help the Comptroller's Office to keep abreast of issues and concerns arising in the field.

- Provide the ability to correct FI-NET input errors as soon as possible. Managers have indicated that they find it difficult to determine whether errors in FI-NET have been corrected. Make an effort to correct all errors within the next accounting period so that the corrected data item will be listed on the next FI-NET reports managers receive. The shorter the time period between error detection and correction, the easier it will be for managers to recognize the correction.

2. Issue: Managers and staff have difficulty understanding and reconciling information between FI-NET, MMS, and PPMS.

a. Findings:

Managers have expressed concern about the fact that the management systems and FI-NET currently do not relate well to each other, or, that their
relationships are not well defined. This indicates that some managers do not understand the purpose of each system and what information they can provide. More information about the role of each management system and how they relate to each other is needed:

Preconstruction Program Management System

- PPMS is a project cost estimation and scheduling tool. It provides labor costs estimates that are based on average labor rates for both internal resources and contractor staff. They are used in developing project estimates on which initial project budgets are based. FI-NET costs are based on actual wages and salaries and are meant to provide actual budget information. Not all managers using both PPMS and FI-NET appear to understand that the information provided by the two systems is not interchangeable.

- PPMS utilizes information only for the preconstruction phases of a project. It does not currently track construction labor but the Department intends to expand the system or use some other system to be able to track labor and estimate and control project costs across all phases when funding for the system addition becomes available. We have found that construction managers are more frustrated than preconstruction or maintenance managers in their quest for useful project information. We believe that this is in part due to the fact that they currently do not have the support of any management system beyond FI-NET.

- The PPMS serves as the central database to track federal obligation authority balances for all phases of federally funded projects. This is the only type of information beyond the design stage that the system contains.

Maintenance Management System

- It appears that not all UDOT managers and accounting staff understand the different roles of MMS and FI-NET. MMS information is a valuable scheduling and day-to-day performance evaluation tool for maintenance managers but should not be used to track expenditures. We have heard that some maintenance managers who were tracking expenditures through MMS rather than FI-NET have significantly overspent their budgets. This was apparently because they felt more comfortable with MMS and did not completely understand that it does not provide accurate information for that purpose. Similarly, some accounting staff do not appear to understand the scheduling and performance evaluation capabilities of MMS and therefore are raising questions about the value of the MMS.
• In the maintenance area, all budgets are based on the cost of carrying out specific maintenance activities. FI-NET budget information is at a higher level and even allows transactions to be posted without an activity code. This difference in the systems has, in particular immediately after migration to FI-NET, caused problems with entry of maintenance cost information into FI-NET. UDOT staff is aware of the problem and has increased training to improve data entry. According to staff, data entered are more complete now but incomplete information is still a problem. MMS planning staff are currently posting incomplete data (the most frequent problems are missing or incorrect milepost or other reference information) to a separate holding file which is distributed for correction once per week. Errors are then corrected manually by maintenance analysts.

• Until March 1997, labor and equipment cost was passed through T-91 to MMS at the front-end while material costs were passed on at the back end. This made it difficult for maintenance managers to determine what funds are remaining for maintenance activities. UDOT staff have worked to address this problem and are as of March 1997 passing all maintenance data to MMS and FI-NET up front, eliminating much of previous problems with incomplete information.

• UDOT MMS staff is in the process of completing the system. Some MMS reports are not yet cleaned up, adding to confusion in the field. MMS staff are working on correcting these problems.

b. Recommendations:

• Provide managers and staff with a description of the roles of MMS, PPMS, and FI-NET in providing management and accounting information. Managers and accounting staff would benefit from a clarification of the different roles that the systems play in providing project management, performance evaluation, and budget information. The discussion of these materials could be integrated into the agenda of one of the regular meetings that the Department holds with each group of managers or accountants.

• Simplify data access to these systems through an executive information system, data warehouse, or other capability. Other state departments of transportation have in recent years implemented executive information systems and associated data warehouses to provide managers with relevant information for decision making. Such a system can provide a snapshot view of such information as project budget or schedule variance, levels of
staff utilization, the percentage of direct versus indirect activities charged by different organizational units, and similar resource management issues as well as accomplishments. UDOT should evaluate the benefits and costs of developing and implementing such a system.

- **Expand the PPMS or develop a similar system to cover all project phases.** When the Department began development of PPMS, it was with the intention to develop a project estimation, management, and control tool that would allow managers to evaluate the status of a project throughout its entire life time. Due to budgetary constraints, PPMS currently covers only the preconstruction phases of project development, the construction component of the system has not yet been developed. Also missing is the ability to cost and evaluate projects through all phases. We understand that the Department is currently evaluating systems options for tracking projects through construction. The development of the construction component and life-cycle costing capabilities should be a high priority for the Department. Should UDOT consider development of a separate construction management system, the ability to consolidate information from the different management systems is of paramount importance so that managers can have a comprehensive view of project status.

- **Review the data transfer between MMS and FI-NET to eliminate unnecessary duplication of information.** Our research has indicated that, upon the request of MMS managers, UDOT includes most of the information required for MMS into FI-NET as well, which leads to duplicate information in the two systems. Components of these data, including milepost and materials quantities information, appear to be passed to FI-NET solely to be passed back on to MMS. This means that FI-NET is carrying thousands of transactions that are not processed or used by FI-NET. Since FI-NET runs on a mainframe, storage of these data can be quite costly. We recommend that UDOT review the data that are passed between FI-NET and MMS to determine which data are actually required in FI-NET. Data that are used only by MMS should not be passed through FI-NET to reduce unnecessary data storage costs. To the extent possible, data should be stored in one database only.

- **Review current MMS and FI-NET data entry and passage processes to minimize timing problems.** Due to the fact that the payroll system posts payroll information on a biweekly basis, labor costs in FI-NET lag two weeks behind actual labor costs. In the maintenance area, materials cost may sometimes be posted significantly later than labor and equipment costs for the same job. We recommend that UDOT review the processes for data entry to determine whether there are opportunities for improvement.
• Evaluate the necessity of the error holding file for maintenance data. MMS planning staff implemented the error holding file at a time when errors were more frequent than they are today. UDOT should review the necessity of maintaining the file and review the potential for automating error correction.

• Identify the data requirements for a performance-based budgeting system. The Department is poised to move to a performance-based budgeting approach. Section III of this report discussed the need to define the products and services provided by UDOT more clearly and to identify direct and indirect activities related to these products and services. There also will need to be data fields for performance measures and perhaps the capability to combine financial and performance data to obtain units costs for activities. The results of these efforts will provide the basis for the development of a performance-based budgeting approach and the data that will be needed.
VI. Contractor Charges

UDOT has a responsibility to ensure that the resources it is entrusted with are providing Utah with the transportation infrastructure it needs in the most cost-effective way. To fulfill this mission, the Department carries out work in house or retains consultant or contractor assistance. There are three main reasons for UDOT to retain outside assistance:

1. **UDOT does not have sufficient staff to carry out the work.** This is for example true for all construction activities which are generally carried out by contractors.

2. **UDOT staff do not have the experience or knowledge required for a specific project.** These are typically projects that are rare. An example may be a tunneling project where specialized expertise is required.

3. **UDOT needs an independent perspective.** Some of UDOT’s projects are politically sensitive. This is particularly true with regard to environmental issues. In these cases, retaining a consultant to carry out the environmental or public involvement work can help ensure that the work is not perceived as biased by stakeholders or the general public.

In addition to ensuring that UDOT staff, equipment, and materials are used cost-effectively, it must also ensure that consultant charges for contracted work are reasonable and appropriate. Efforts to allocate limited UDOT resources efficiently require the ability to determine whether it would be more cost-effective to complete the work in-house or to engage a contractor. This means that UDOT must be able to compare the cost of, for example, designing a bridge in-house with the cost of retaining assistance from a design and engineering consulting firm to carry out the same task.

A. Current Situation

1. **Consultant Services**

A consultant services staff of five oversees UDOT’s Consultant Services Program. The staff prepare requests for proposals and qualifications, advertisements, oversee selection processes, and negotiate and prepare contracts. The staff also provide semi-annual training to consultant managers in the regions and other organizational units.

Each prospective consultant must pre-qualify to be able to work for the Department. This includes submission of a certified copy of an audit report or a CPA letter.
certifying that the consultant meets UDOT's requirements as stated in a form to be completed by all prospective consultants.

The form includes reference to overhead rates that must be verified by the CPA. It requires details regarding the chart of accounts, cost segregation through the accounting system, preparation of billings, and a number of other details. For example, it asks for specific labor, additive and direct charge, and equipment information. Questions include details regarding the recovery of costs associated with nonbillable labor costs, charging of leave costs, and the financial statement costs included in the overhead rate. At present, the Department considers an overhead rate of 150 percent or less reasonable. The process and threshold used by UDOT is to evaluate rates similar to that used by other state departments of transportation.

Consultants selected for a job receive a scope of work from the Project Manager. The consultants use it to prepare their own scope of work and cost estimate. Consultant, project manager, and Consultant Services staff will then meet to negotiate costs, based on the revised scope of work. Certain modifications to the base contract with regard to time and cost are possible for each type of consultant project. In these cases, the project manager will approve the new costs or rates. Modifications to contracts follow the same review and negotiation process as the initial contract.

UDOT has policies for the review of consultant contracts and work. Internal audit staff are responsible for the review and audit of costs charged to projects under the consultant contracts. Staff audit all engineering projects over $50,000 and others as requested. Audit criteria are based on federal costs principles as defined in FAR (48 CFR) Part 31. They review consultant charges to ensure that the correct overhead rates have been applied and that only allowable costs were charged. If a contract covers several years, the rates for each year must be reviewed separately.

During fiscal year 1995-1996, there were active consultant contracts valued over $85 million. This includes new contracts valued over $51 million and changes to existing contracts of almost $17 million. In general, about 70 percent of all contracts are modified at some point.

2. Contractor Services

Based on the factors cited above, UDOT already contracts out a significant amount of work. Almost all construction is carried out by the private sector, as is the installation of most traffic signals. The Department uses a low bid process to select contractors. UDOT project managers in the regions will manage these projects and monitor contractor performance and charges.
In addition, UDOT’s right-of-way (ROW) unit uses contract staff to appraise and negotiate for parcels that are required for right-of-way. This was necessary due to an increase in the work load from 300 to 1,200 parcels per year. ROW was able to increase its case load by contracting appraisal and negotiation tasks out to private contractors. Contractors are selected based on skill and the geographic area in which the parcels are located. Its own staff have shifted to a contract manager role. According to staff, this approach enables ROW to carry this extraordinarily high workload without increasing its own staff. Managers indicate that this approach is more cost-effective than to increase UDOT staff since it allows ROW to simply discontinue contract work once the parcel load goes back to normal levels.

B. Issues, Findings, and Recommendations

1. Issue: Cost control on consultant/contractor projects has been a problem.

   a. Findings:

   • Consultant/contractor managers sometimes do not have the knowledge, skill, or expertise to adequately monitor consultant/contractor contracts. During our interviews, both UDOT managers and FHWA staff expressed concern about the ability of some project managers to adequately monitor and manage consultant/contractor charges and work quality on preconstruction and construction projects. This is despite UDOT’s efforts to address the issues raised by the auditor general’s report. Managers we interviewed indicated that this was due in part to the right-sizing efforts in the Department that caused a significant loss of experienced staff. Consultant Services staff perceive both a lack of technical project-related and project management skills as factors.

   • Consultant Services staff indicated that the implementation of PPMS has helped in better defining the scope of projects and reducing the need for modifications. Training has helped mitigate some problems. However, staff still perceive a need for more training for project managers, in particular in the negotiation area.
b. Recommendations

- Give managers the information they need to track project budgets closely. In the preconstruction phases of UDOT projects, PPMS already helps define the scope and cost of projects more precisely and allows managers to track charges. In addition, the provision of more detailed project budget information already initiated by UDOT will help in containing consultant /contractor costs. Current efforts to either include the construction phase of projects into PPMS or develop a separate system will also be useful in providing information that can help contain costs.

- Proceed with current efforts to develop and implement a project management function. This effort will include training for project managers and the development and implementation of tools that will provide the managers with the information that is needed to manage projects in a fashion that can contain costs. Special attention should be paid to ensuring that projects can be defined and scoped more precisely in the future, reducing the need for contract modifications, and to provide managers with the technical and negotiation skills required to ensure that cost increases can be kept to a minimum.

- Track contractor performance on projects and include a review of previous performance in the selection process. UDOT Consultant Services is already in the process of developing a feedback mechanism. The performance measures for outside consultants/contractors should correspond to those to be developed for UDOT to ensure that the Department can effectively decide whether it will be more cost-effective to develop a project in-house or contract it out. The performance reviews can be used to reward or sanction contractors.

- Conduct a more thorough review of changes to project costs to evaluate their validity. This may for example include a review by the UDOT staff members who initially negotiated the contract. The Department may also decide to request a more detailed written explanation of the circumstances leading to the change in scope and costs.
2. Issue: UDOT managers are not always able to determine whether a project should be carried out in-house or by a consultant/contractor.

a. Findings:

- UDOT does not currently develop project cost estimates that include overhead costs in a fashion that would allow managers to make a comparison. However, UDOT has the information required to develop comparable cost estimates. The Department requires consultants to provide overhead rates that are based on federal reporting requirements for consultants (48 CFR). Its own indirect cost allocation plan develops a Department-wide full overhead rate that is based on Circular A-87. Because there is a close relationship between the two approaches, it is likely that costs can be used for comparison purposes.

b. Recommendation:

- Take a full cost approach to compare the cost of in-house vs. outsourced work. FI-NET contains direct labor costs for all UDOT staff. UDOT’s indirect cost allocation plan provides information on the full cost overhead rate for its staff. (As described in Section III, UDOT follows the guidelines for Circular A-87 to develop this information.) Contractors are required to provide hourly rates and a full cost overhead rate as well as profit information for the prequalification process. This is based on 48 CFR, which has guidelines similar to Circular A-87. The Department can calculate in-house versus outside costs by using this information. While there are small differences in the calculation methods for the overhead rates in Circular A-87 and CFR 48, we believe that this approach will provide a reasonable approximation that can support decision making. Limited information from benchmarking efforts indicates that UDOT has greater ability to compare costs than many other states because it maintains an indirect cost allocation plan and determines full costs based on Circular A-87.
3. Issue: UDOT must maintain the knowledge, experience, and technical skills required to develop and monitor contractors to ensure cost control.

a. Findings:

- During our interviews, both UDOT and FHWA staff have indicated that UDOT must retain the skills and expertise required to develop and monitor projects in house in order to contain costs on services provided by the private sector. Some indicated that the rightsizing effort through which UDOT went has caused the Department to lose skills and experience, which in turn was cited as the cause for some cost containment problems. This appears to still be an issue, despite the fact that UDOT has provided training for its managers and changed its internal policies to more accurately record project charges. The implementation of PPMS appears to have helped in defining and scoping projects more accurately and providing better work flow and charge information for managers. They now can determine whether to move staff within UDOT or retain outside assistance to maintain project schedules. PPMS also makes it easier to monitor labor hours charged to projects.

- Lack of competition has in some areas increased contract costs. Traffic Operations managers have indicated that with regard to the installation of traffic signals and related construction work, the lack of an in-house capability may have actually increased costs for UDOT. Staff explained that, until recently, there were only two private providers in the state which had divided the state geographically into two areas. This created a virtual monopoly for each company in its respective area. UDOT staff indicated that bids were about 25 percent over estimated costs. To address this, during the last legislative session, UDOT staff requested and received funds for the creation of a small signal installation crew within the Department. Since this crew only works on small projects not requiring any construction, it can be productive throughout the year. According to managers, the mere fact that the crew exists has helped contain costs and reduce the existing backlog of projects by 60 percent. Other benefits of the internal crew are that it allows the Department to react immediately on small high profile projects. In addition, the UDOT crew does not always require a detailed design, and does not need to go through a bid process, thus reducing costs.
b. Recommendations:

- **Develop a project history database.** With PPMS, UDOT has the basis for a project history database that can provide information on the actual resources and time requirements as well as the activities needed to complete different types of projects. It will be important to update both the PPMS processes and standards regularly. In addition, a database containing information on contractor performance and other data to supplement information available in PPMS should be useful.

- **Take steps to maintain in-house capabilities in areas that are critical to UDOT's business.** UDOT must be able to maintain the technical skills that are required to carry out its function. Depending on the situation in a particular organizational unit, this may mean to develop opportunities for advancement that help retain senior staff, to train junior staff to enable them to fill positions vacated by retiring senior staff, or to recruit new skilled staff.
Utah Department of Transportation (UDOT)

Performance Audit

Policy-Level Interview Notes

Discussion Draft

I. Introduction

In November and December 1996, interviews were conducted with members of the Utah Transportation Commission, staff of the Legislative Auditor General and UDOT top management. The interviews were to obtain views on the performance audits, in general, and the Project and Administrative Charges Management Performance Audit, in particular. Following is a list of those interviewed and some of the principal issues identified.

II. Individuals Interviewed

A. Utah Transportation Commission

Glen E. Brown, Chair
Todd G. Weston, Vice Chair
James G. Larkin
Ted B. Lewis
Hal M. Clyde
Dan R. Eastman
Sheri L. Griffith

B. Legislative Auditor General

Wayne Welsh, Auditor General
John Schaff, Deputy Auditor General
Tim Osterstock, Audit Supervisor
C. UDOT Management

Tom Warne, Executive Director
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III. Interview Notes

A. Transportation Commission

1. Charges Management

- Incorrect charging to projects is viewed to be a problem of supervision by at least one commissioner.

- There are problems with some of the definitions of certain cost categories where there appears to be overlap, in particular, between preliminary and construction engineering.

- In every function (e.g., maintenance), there are certain cost categories that must be monitored more carefully than others because of the impact that they have on an overall budget. It is important to identify these categories and track their costs.

- There should be an indirect rate established for UDOT based upon sound assumptions that can be applied to direct costs to permit full costing of services.

- There is an insufficient audit trail to be able to track charges for different UDOT projects and activities.

- Commissioners generally indicated that they did not understand UDOT cost procedures. Some expressed a desire to know more about these procedures, while others indicated that additional knowledge would not help them given the Commission's limited statutory authority to take action on these issues.

- One commissioner said that a key challenge was for UDOT to have the courage to look at costs.
2. Cost Control

- Cost control was by far the biggest issue mentioned by commissioners.
- Most of the commissioners expressed concern about costs increasing above original estimates.
- One commissioner said that he could not understand how two projects of a similar nature could have costs that vary as much as they do.
- Reasons cited for cost increases included "low balling" of front end costs by engineering consultants, lack of a culture in UDOT oriented to cost control, insufficient competitive bidding of subsequent phases of engineering contracts, too close relationships between UDOT employees and engineering consultants and additional requirements imposed by headquarters on the regions.
- One commissioner indicated that he did not think UDOT managers were being devious about costs but that there was a systemic problem.
- Some commissioners indicated that they believed that UDOT had made some progress toward controlling costs because of efforts of the Executive Director to establish project budgets, require cost estimates to account for inflation, provisions for contingency and other factors.
- Other commissioners indicated that they continued to have concerns in this area and wanted to ensure that UDOT had the controls it needed.
- One commissioner said that he questioned whether UDOT could manage large projects and believed that it would be prudent to contract with private project managers as some other public sector organizations do.
- One commissioner indicated that it was important to have an independent review of the I-15 project because UDOT does not have great experience doing projects of this size and using a design-build approach.

3. Systems

- There were high hopes for the Preliminary Project Management System (PPMS) to use as a vehicle for cost control.
• There was also some concern expressed around the "human element" surrounding use of PPMS; whether it would be implemented and used properly.

• One commissioner wanted to ensure that he saw some actual results from PPMS to demonstrate its value.

4. Benchmarking

• Nearly all of the commissioners saw value in benchmarking costs with other state departments of transportation and the private sector.

• Two of the commissioners said that they did benchmarking in their own businesses.

• One commissioner indicated that it should be a goal of UDOT to do better than other state DOTs.

• There were also some cautionary notes with one commissioner saying that care should be taken to only compare with the private sector where one could compare "apples to apples". Another commissioner said that he was reluctant to spend too much on benchmarking, preferring to spend money on the roads.

5. Performance Audit Success

Commissioners were asked what would make the performance audits a success and the following items were indicated.

• The report should have a concise summary.

• There should be specificity in recommendations.

• There should be mostly findings and conclusions.

• Recommendations should contain adequate support.

• Recommendations should be something that can be accomplished.

• The report should identify things that they ought to know but don't know.
- Department personnel must accept responsibility for findings and implement recommendations.

6. Commission Authority

- Several commissioners cited the limited authority of the commission to act on management issues such as charges management and their limited interaction with UDOT staff.

- One commissioner did view that the commission had authority over costing issues because, to the extent that there are project cost overruns, this takes away commission prerogatives to program funds.

7. Other Issues

- Several of the commissioners commented that they believed Tom Warne was doing a good job of trying to improve cost controls and department management.

- There were comments about higher level management in UDOT making great strides in making improvements but concern expressed about middle management doing the same. There was concern about dealing with staff competency issues in the field.

- It was indicated that issues should be prioritized and be given a scheduled timeline.

- UDOT management need to give attention to positive as well as negative incentives for cost control.

- Several commissioners expressed concern over the increasing trend of the legislature to line item mandate projects and the disruptive effect this has on meeting needs, statewide, in a balanced way.

- Commissioners believe that future performance audits should address issues such as improving the efficiency of UDOT activities, evaluating the approach to acquiring and landbanking right of way and generally improving the effectiveness of management.
B. Legislative Auditor General

1. Charges Management
   - The audit staff spent a fair amount of time recounting their review of the Forest Street Interchange. In particular, they found that staff was "code shopping", charging to project work that they did not do and time that they did not actually work on projects.
   - The biggest concern the audit staff had about the above charging situation was productivity. If staff were not actually working on projects as indicated, what were they working on?
   - They indicated that the key issue is managing people effectively.
   - To help address this, they indicated that the governor had asked UDOT to come up with performance measures.

2. Cost Control
   - One of the cost control issues is that the engineering firms that do preliminary engineering always seem to get the construction engineering work and use that as an opportunity to escalate costs.
   - BYU did a review that indicated that UDOT did a poor job of writing contracts and a poorer job of reviewing them.

3. Systems
   - They have not yet seen results from the PPMS system.
   - They have some concern about whether middle management will use PPMS, because some individuals that they interviewed claimed they were not involved in its development.

4. Benchmarking
   - It is important to be able to compare costs with other state DOTs and the private sector.
5. Performance Audit Success

- It is more important to identify how UDOT can improve than to determine how bad they are.

- There needs to be an understanding of necessary management and financial controls.

- Success will be measured from within UDOT; their willingness to actually make the necessary changes.

C. UDOT Top Management

1. Charges Management

- The performance audit should be used to improve, not to punish.

2. Cost Control

- There have been changes made recently to improve cost control, including establishing project budgets and setting target levels for preliminary and construction engineering.

- There is a need to look at overhead costs such as training to determine whether they are spending too much or too little.

3. Benchmarking

- Benchmarking should be used if it can be done in a meaningful way.

- Benchmarking can be used to determine if targets that have been set for preliminary and construction engineering are reasonable and training cost expenditures are, as well.

- The ability to compare costs with the private sector is important because there is pressure to privatize where it makes sense.
4. Systems

- It is important to make sure PPMS contains the correct numbers for such things as resource estimates.

- With systems, it is important to not make things too complicated (e.g., having too many maintenance categories to track).

5. Performance Audit Success

- The audit should identify where UDOT has the greatest risk and exposure. It should identify which recommendations have the highest payback.

- The work must be credible to organizations outside the department, in particular the legislature.

- The work should complement UDOT quality improvement initiatives.