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ENERGY AND MINERALS
DIVISION

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MARCH 15, 1982

The Honorable Robin Beard
House of Representatives



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The Honorable Howard H. Baker, Jr.
United States Senate

Subject: A Process to Determine Whether to Construct
Projects In-house or by Private Contractor
Is Needed by the Tennessee Valley Authority
(EMD-82-50)

An issue discussed at March 1981 Tennessee Valley Authority (TVA) oversight hearings before the Senate Environment and Public Works Committee was whether it was more economical for TVA to contract for construction or perform the construction in-house. Because of the conflicting arguments over which construction approach is the most economical, you requested that we address the following questions:

- Does TVA have a policy whereby the cost to build a particular project using its own employees is compared to the cost of using a private contractor?
- If TVA has such a policy, what criteria are used to determine the least cost approach and are the criteria reasonable? Is such a policy followed on all projects?
- How does TVA calculate overhead and are administrative costs included or excluded from comparisons? How does this allocation of cost compare with industry or other Government construction projects?
- What factors should TVA consider in developing an appropriate method of comparing costs between in-house construction and construction by private contractors?

This letter summarizes the salient points of our analysis. A detailed discussion of background material, objectives, scope, and methodology, and our analysis of the issues raised by your questions are found in enclosure I.

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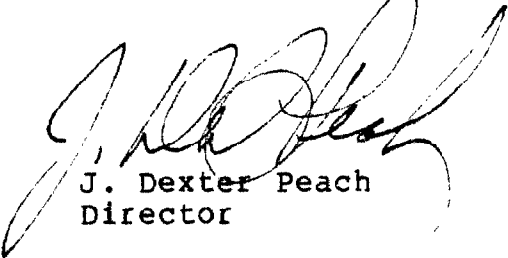
We found that TVA does not have a procedure to routinely compare the cost of constructing a particular project using TVA employees to the cost of using a private contractor, nor does it have criteria to use when cost comparisons are made. Although TVA does not routinely compare costs, our evaluation of some of the comparisons made did not disclose that construction by private contractor is, across-the-board, more economical than in-house construction. Many of TVA's cost comparisons show the in-house approach to be more economical. TVA has contracted for construction when its cost comparisons showed contracting out was more economical.

When TVA makes cost comparisons, not all indirect overhead costs are included. However, we added these overhead costs to the estimates and found they did not affect the outcome of the decision.

In July 1981, TVA established a task force to study its construction policies and practices. The task force concluded that although TVA considers a number of factors in deciding whether to perform work in-house or by contract, the decision-making process had not been formalized nor were the decisions appropriately documented. The task force recommended TVA adopt a process that would result in a well-documented decision, considering all appropriate factors, to construct a project in-house or by private contractor. The task force recommendation is a good first step. However, the recommendation is general and more specific supplementary actions need to be taken and instructions developed to ensure that valid cost comparisons are made and all criteria considered.

We are recommending to the Board of Directors that procedures and criteria be developed to implement the task force recommendation. The procedures and criteria developed should ensure that consistent cost comparisons are made and that decisions are well-documented. *rec*

As agreed with your staffs, we are providing this information to TVA. We also agreed to perform no further work at this time, but we later plan to follow up and evaluate how TVA has implemented the task force recommendation. TVA received a copy of our briefing document subsequent to our December meeting, and did not raise any issue with it, therefore, we did not obtain their comments.



J. Dexter Peach
Director

Enclosure

DOES TVA HAVE AN EFFECTIVE
PROCESS TO DETERMINE IF CONSTRUCTION
CAN BEST BE PERFORMED IN-HOUSE
OR BY CONTRACT?

BACKGROUND

TVA has historically used in-house staff for most of its design and construction work. The work routinely contracted out either required specialized skills (for example, cooling towers for nuclear plants) or involved crafts that TVA does not have in-house (roofing, bricklaying, and window installation). Table 1 shows, for fiscal years 1977-81, the Office of Engineering, Design and Construction's (OEDC) expenditures for both in-house and contract construction. ^{1/} For this 5-year period, OEDC's construction expenditures totaled about \$7 billion, over 87 percent of which was performed in-house.

Table 1
OEDC Construction Expenditures
Fiscal Year 1977-81

<u>Fiscal year</u>	<u>In-house</u>		<u>Contract</u>	
	<u>Amount</u> (000)	<u>Percent</u>	<u>Amount</u> (000)	<u>Percent</u>
1977	\$ 934,869	89.7	\$106,857	10.3
1978	1,053,211	92.9	80,994	7.1
1979	1,338,845	89.3	160,933	10.7
1980	1,492,924	88.4	194,951	11.6
1981	<u>1,300,260</u>	<u>79.1</u>	a/ <u>343,594</u>	<u>20.9</u>
Totals	<u>\$6,120,109</u>	<u>87.3</u>	<u>\$887,329</u>	<u>12.7</u>

a/According to OEDC officials, the increase in the contract amounts during fiscal year 1981 is primarily due to contracting for the design and construction of the Chattanooga Office Complex and contracting for many of the additions and improvement projects at the generating plants.

Government policy

Federal agencies must follow criteria established in Office of Management and Budget (OMB) Circular A-76. This circular requires Federal agencies to justify through cost comparisons

^{1/}The majority of TVA's construction expenditures are made by OEDC.

whether needed commercial or industrial type work should be done under contract with private sources or in-house using Government facilities and personnel. TVA does not believe it is subject to Circular A-76 because its procurement authority stems from the TVA Act and is independent of Government-wide procurement regulations and systems. OMB has questioned TVA's position on Circular A-76, but has not yet obtained TVA's compliance.

TVA task force on
construction policy

In July 1981--as a result of March 1981 oversight hearings--TVA formed a task force to study design and construction work performed in-house. The task force was to determine if TVA could improve its selection process and ensure cost effectiveness. The task force's report, published in January 1982 after the TVA Board approved the recommendation, concluded that TVA did not have a formal system to document its decisions to perform construction work in-house or by contract. The task force recommended that a policy be established to make well-documented cost comparisons for construction projects.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our audit addressed the specific questions you asked and was performed in accordance with GAO's current "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions." While the initial scope of the audit was TVA wide, an analysis of TVA's construction expenditures disclosed that the majority of them were made by OEDC. Because other TVA offices had a comparatively small volume of construction, our scope was limited to OEDC. We also compared TVA's policies and procedures to those of seven investor-owned electric utilities ^{1/} to determine the policies and procedures they followed in designing and constructing power generating facilities. We selected these utilities based on their size, the type generating facilities they operated, their proximity to TVA, and the available data on how they designed and constructed generating facilities.

We reviewed 10 of 14 cost comparisons TVA made during the period 1970-81. TVA officials stated that these comparisons were made for various reasons such as (1) shortage of in-house workers, (2) inquiries by private contractors, or (3) a belief by construction managers that contractor costs may be competitive. Although more cost comparisons may have been made, we were only

^{1/}Georgia Power Company, Duke Power Company, Alabama Power Company, Arkansas Power and Light Company, Florida Power and Light Company, Florida Power Corporation, and Potomac Electric Power Company.

able to identify 14 because TVA does not keep such comparisons in central files. We also reviewed TVA's overhead cost allocations and cost studies 1/ comparing TVA's overall costs to those of other utilities. Time constraints prevented us from verifying the accuracy or validity of the costs reported by TVA.

We also held discussions with representatives of the Associated General Contractors of East Tennessee, Inc., 2/ and representatives of private contractors located in east Tennessee. We selected the private contractors based on recommendations of the Associated General Contractors of East Tennessee, Inc.

To address the question of whether TVA has a policy to compare the cost of constructing a project using private contractors or its own employees, we reviewed the TVA Act, TVA's internal policies and procedures, and discussed this issue with top TVA officials in Knoxville, Tennessee, as well as power program officials in Chattanooga, Tennessee.

In identifying the criteria used to determine whether construction should be done in-house or by contract, we reviewed TVA's policies and discussed this aspect with TVA officials. We also analyzed the information presented in the task force report on this topic. In addition, we discussed with other utility officials the criteria they used.

To analyze how TVA allocates overhead costs, we reviewed nine TVA project cost comparisons. We discussed how overhead costs are derived and allocated with TVA officials as well as with other utility officials and officials of the Associated General Contractors of east Tennessee.

To determine what factors are considered in developing an appropriate method of comparing costs, we analyzed the criteria set out in OMB Circular A-76. We also discussed with other utility officials the factors they use in making cost comparisons. Finally, we analyzed the recommendations in the task force report to determine how they measured against Circular A-76 criteria as well as the criteria from other utilities.

1/"Projections of Cost, Duration, and On-Site Manual Labor Requirements for Constructing Electric Generating Plants, 1979-1983," U.S. Department of Labor, and the U.S. Department of Energy, September 1979.

2/A nationwide organization of construction contractors. Local chapters are located throughout the country, one of which covers east Tennessee.

DOES TVA HAVE A POLICY WHEREBY THE COST TO BUILD A PARTICULAR PROJECT USING ITS OWN EMPLOYEES IS COMPARED TO THE COST OF USING A PRIVATE CONTRACTOR?

Generally, TVA designs and constructs its facilities with its own employees. TVA has no policy or procedure that requires a comparison of the cost to build a particular project in-house to the cost of using a private contractor. Nor does TVA routinely make such comparisons, although OMB Circular A-76 requires detailed, project-by-project cost comparisons for new projects.

TVA does not believe it is subject to Circular A-76 because its procurement authority stems from the TVA Act and is independent of Government-wide procurement regulations and systems. In addition, TVA's view is that since its construction program was in process at the time Circular A-76 was approved in March 1966, it is exempt from A-76 requirements. OMB has questioned TVA's position on Circular A-76, but has not yet obtained TVA compliance.

In discussing the construction strategy with TVA officials and our review of the task force report, we found TVA relies on in-house design because:

- It is consistent. There is continuing availability of the design organization after construction and during facility operation.
- TVA has technical expertise. An experienced in-house staff provides flexibility for responding to design problems.
- Scheduling and coordination is facilitated. Reduced lead times from design to construction result and time spent obtaining contracts could be spent doing the work.
- Changes are easier to make. If changes are needed they are more easily and quickly made when only one party is involved.

The task force report cited several other factors which influence TVA's policy on using an in-house work force for construction. These include:

- Concurrent design and construction. Under TVA's in-house system, construction proceeds concurrently with design and is more expeditious than if work were done under contract.
- Workmanship. TVA uses the facilities it designs and builds. Thus, it has a vested interest in doing the job right initially and is in a better position to assure this.
- Continuity. Transfer of experienced and key personnel from project-to-project. Also, there is the flexibility

of staggering construction and maintenance schedules to meet emergency needs.

Officials of the seven utilities we contacted stated that they also did not have formal decisionmaking procedures with respect to in-house versus contract construction. Instead, they rely on the professional judgement of their managers in deciding whether to construct in-house or to contract out.

IF TVA HAS SUCH A POLICY, WHAT CRITERIA ARE USED TO DETERMINE THE LEAST COST APPROACH AND ARE THE CRITERIA REASONABLE? IS SUCH A POLICY FOLLOWED ON ALL PROJECTS?

TVA has no formal policy or criteria that initiate cost comparisons. Decisions to compare costs are made on an individual project basis and the decision process is not well-documented.

TVA maintains that the use of an in-house workforce for design and construction has been the most economical approach. OEDC's cost comparisons generally support that belief. Of the 14 comparisons we identified for the period 1970-81, nine showed that TVA's costs were lower and, in all but one of these cases, TVA performed the work in-house. According to OEDC's Cost Management Specialist, TVA lacked the necessary expertise and staff to do the work in that one case. TVA contracted work out in each of the five instances where the comparison showed contractor costs were cheaper.

HOW DOES TVA CALCULATE OVERHEAD AND ARE ADMINISTRATIVE COSTS INCLUDED OR EXCLUDED FROM COMPARISONS? HOW DOES THIS ALLOCATION OF COST COMPARE WITH INDUSTRY OR OTHER GOVERNMENT CONSTRUCTION PROJECTS?

TVA classifies indirect overhead into three categories.

1. Office of the Manager, OEDC - includes salaries and related expenses of the OEDC manager's staff, such as Management Planning Staff, Cost Planning and Control Staff, and Management Systems Staff.
2. Administrative and General Expense - includes the costs associated with the TVA Board of Directors, the Office of the General Manager, the Office of the General Counsel, and Auditing Services. The Office of the General Manager includes the Office of Budget and Planning, EEO, and Information Office.
3. Office of Management Services - encompasses costs associated with 18 offices, branches or divisions, including Personnel, Finance, Purchasing, Public Safety Services and Medical Services.

All administrative costs, according to TVA procedures, are included in one of the three indirect overhead categories. Costs such as salaries, leave accruals, office space, equipment usage, utilities, janitorial services, guard services, and fringe benefits, including vanpool benefits and TVA or Civil Service retirement contributions, are included in overhead categories.

Cost comparisons do not include indirect overhead

The lack of written procedures or requirements identifying the costs to be included in comparisons has resulted in inconsistencies in cost estimating practices. TVA usually does not include its indirect overhead costs in comparisons. Of the 10 comparisons we reviewed, nine were documented sufficiently to enable us to determine if TVA included overhead costs. Of these nine itemized comparisons, eight did not include all of TVA's indirect overhead costs. In five cases the work was contracted out anyway; therefore, failure to include TVA's indirect overhead did not adversely affect the comparisons.

The Supervisor of OEDC's Cost and Estimates Section told us that current cost estimating practices exclude most indirect overhead from partial project or subproject estimates. All indirect overhead costs would be included only for total project estimates prepared for project authorization. Since most estimates used in comparisons with contractor bids are for partial projects, all indirect overhead is not included. The supervisor also told us that overhead is a fixed cost to TVA which will be incurred regardless of whether work is contracted or done in-house. Therefore, he believes that indirect overhead is immaterial in determining whether it is cheaper to perform work in-house or under contract.

TVA's failure to include its indirect overhead costs would not have changed the results of the remaining three cost comparisons. In each case the TVA estimate was significantly less than the low bid and only increases of 37 to 71 percent to the TVA estimates would have changed the outcome of the comparisons. Based on current TVA estimates, the indirect overhead costs would have amounted to less than 5 percent of total project cost.

WHAT FACTORS SHOULD TVA CONSIDER IN DEVELOPING AN APPROPRIATE METHOD OF COMPARING COSTS BETWEEN IN-HOUSE CONSTRUCTION AND CONSTRUCTION BY PRIVATE CONTRACTORS?

Because of the task force's evaluation and subsequent recommendation, we did not develop specific criteria that TVA should use in developing an appropriate method of comparing construction costs. Instead, we analyzed the task force's recommendation and found that it is a good first step in developing a policy that will ensure that cost comparisons are

made. However, the recommendation is general and more specific supplementary actions need to be taken and instructions developed to ensure that valid cost comparisons are made. Procedures and criteria developed should ensure consistent cost comparisons and well-documented decisions. The criteria that are developed should provide for cost comparisons which include

- the same scope and level of performance,
- the same cost factors, and
- all costs, including indirect overhead.