



UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

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ENERGY AND MINERALS  
DIVISION

B-206440

MARCH 15, 1982



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Mr. Charles H. Dean, Jr.  
Chairman, Board of Directors  
Tennessee Valley Authority

Dear Mr. Chairman:

Subject: The Tennessee Valley Authority Needs to Develop  
a Formal Process for Determining Whether to  
Construct Projects In-house or by Private  
Contractor (EMD-82-49)

An issue discussed in March 1981 Tennessee Valley Authority (TVA) oversight hearings before the Senate Committee on Environment and Public Works was whether it was more economical for TVA to contract for construction or perform the construction in-house. There are conflicting arguments over which construction approach is the most economical and Senator Howard Baker and Representative Robin Beard 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?

We found that TVA does not have a procedure to routinely compare the cost of building a project in-house 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

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not disclose that construction by private contractors is, across-the-board, more economical than doing it in-house. We also found that when TVA makes cost comparisons, not all indirect overhead costs are included. These unincluded overhead costs were not significant enough to change the outcome of the decision.

In reponse to questions raised at the March 1981 hearings, TVA established a task force to study the in-house construction policy. The task force report, issued in January 1982, generally reached conclusions similar to ours. We believe the task force's recommendation that a formal process be adopted for deciding the construction approach will take the necessary first step to formalize and document the decision process relating to whether construction work should be done in-house or by private contractor. However, we believe that detailed procedures and criteria need to be developed to implement the recommendation.

We have briefed the requestors' staffs on our work and agreed to do no further analysis at this time. Similar letters are being sent to Senator Baker and Representative Beard detailing our findings.

#### OBJECTIVES, SCOPE, AND METHODOLOGY

Our audit addressed the Congressmen's questions 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 the Office of Engineering Design and Construction (OEDC). Because other TVA offices had a comparatively small volume of construction, we limited our work to OEDC. We also compared TVA's policies and procedures to those of seven investor-owned electric utilities <sup>1/</sup> 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 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 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

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<sup>1/</sup>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.

other cost comparisons may have been made, we were only able to identify 14 because TVA does not keep such comparisons in central files.

Our review included an analysis of TVA's overhead cost allocation and other studies 1/ which compared 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 in determining whether to perform work in-house or by contracting, we reviewed TVA's policies and discussed this aspect with TVA officials. We also analyzed the information presented in a recent TVA task force report on this topic. In addition, we discussed with other utility officials the criteria they use in determining which construction method to use.

To analyze how TVA allocates overhead costs, we reviewed nine detailed 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 established in Office of Management and Budget (OMB) Circular A-76. This circular requires Federal agencies to justify through cost comparisons whether needed commercial or industrial type

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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.

work should be performed under contract with private sources or in-house using Government facilities and personnel. 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 compared to Circular A-76 criteria as well as the criteria used by other utilities.

### 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 expenditures by OEDC for both in-house and contract construction. For the 5-year period, OEDC's construction expenditures totaled about \$7 billion, of which over 87 percent 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>
<b>Totals</b>	<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.

### TVA DOES NOT REQUIRE COST COMPARISONS AND HAS NO CRITERIA TO FOLLOW WHEN COMPARISONS ARE MADE

While TVA's general policy is to design and construct its facilities in-house, it does not have a procedure to compare the cost to build a particular project using its own employees to the cost of using a private contractor. Nor does TVA have a policy

requiring comparisons to be routinely made, although OMB Circular A-76, dated March 1966, 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. OMB has questioned TVA's position on Circular A-76, but has not yet obtained TVA's compliance.

TVA has made some cost comparisons in deciding whether to use contractors or its own workforce. The cost comparisons have generally shown that the use of an in-house workforce for design and construction is the most economical approach. Of the 14 comparisons we identified for the period 1970-81, nine showed that TVA costs were lower than the contractors, and in all but one of those 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 the work out in each of the five instances where the comparison showed contractor costs were cheaper.

We were told by TVA managers that, although there are no formal review procedures or documentation of items considered in determining whether to construct in-house or contract out, there are unwritten factors routinely considered in the decision-making process. These factors include schedule requirements, available resources, complexity of the facility, risk (safety, scope and regulatory changes), previous experience, and technology and equipment requirements.

Officials of the seven utilities we contacted also stated they have no formal process for determining which approach to take. TVA's task force reported the same--that 16 utilities they contacted (1) had not formalized the decisionmaking process and (2) did not have procedures for documenting the decisions. The task force report noted that the unwritten criteria "evolve as part of the professional development of a manager, and experienced managers use them as a matter of habit."

CCST COMPARISONS DO NOT  
INCLUDE INDIRECT OVERHEAD

We reviewed 10 of 14 cost comparisons made during the period 1970-81 to determine if all costs were included. In only one instance did TVA include all of its costs, while another estimate lacked sufficient detail to identify the costs included. In eight cases, TVA omitted certain costs--some indirect overhead in all eight cases as well as equipment costs in one.

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.

We added the unincluded costs to the comparisons and found that they did not significantly change the comparison. However, these omissions indicate a need for establishing standard estimating procedures which will assure that estimates are consistent, accurate, and complete.

#### TASK FORCE RECOMMENDS A COST COMPARISON POLICY BE ADOPTED

The TVA task force report issued in January 1982 concluded that, although TVA considers a number of factors in deciding whether to perform work in-house or by contract, the decision-making process is not formalized, nor are the decisions appropriately documented. Thus, the task force recommended TVA adopt a process that considers all appropriate factors and results in well-documented decisions.

The task force further recommended general guidelines to use when determining whether to do work in-house or by contract. The guidelines stated that, generally, work should be contracted when it is a one-time job and TVA does not have the in-house capability, or the work requires specialized knowledge or equipment. For other projects, the task force said to maintain effective control TVA should do sufficient work in-house or do entirely in-house jobs with high risk interface with other TVA facilities or operations, such as in energized switchyards.

The task force report also proposed that each office involved in designing and constructing facilities be instructed to develop procedures of an appropriate level of detail to implement the recommended process.

#### CONCLUSIONS

The basic conflict surrounding TVA's decisions on whether to perform construction in-house or by contract is caused by the lack of an existing policy requiring cost comparisons. Since no policy exists, cost comparisons have not been routinely performed and there is little documentation to show that TVA's decisions are sound. TVA has attempted to justify its practice on the premise that its skilled managers, like those of private utilities, reach decisions in a prudent, business-like manner without producing lengthy documentation.

Our review of several cost comparisons TVA made did not disclose that construction by contract is, across-the-board, more economical than in-house construction. Many of the cost comparisons TVA has made show the in-house approach to be more economical. Also, TVA has contracted for construction when its cost comparisons showed contracting is more economical.

In making cost comparisons, however, TVA did not include all indirect overhead costs. We added the omitted costs to some of the comparisons and found they were not significant enough to change the outcome.

The task force recommendation is a good first step in developing a policy that will ensure that TVA makes well-documented and supportable cost comparisons. To implement the task force recommendation, TVA will need to develop detailed standard procedures for implementing the recently approved policy and then develop specific criteria to use in cost comparison analysis.

#### RECOMMENDATION

The TVA Board of Directors approval of 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. Thus, to ensure the Board's recent recommendation is carried out, we recommend detailed implementation procedures and criteria for cost comparisons be developed. 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.

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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report. We would appreciate receiving a copy of your statement when it is provided to the congressional committees and to be informed of any action taken on our recommendations.

Copies of this report are being sent to Senator Baker and Representative Beard. We are also sending copies of this report to the Director, Office of Management and Budget, and the House and Senate Committees having oversight and appropriation responsibilities for TVA.

Sincerely yours,



J. Dexter Peach  
Director