



United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-270732

December 19, 1995

The Honorable Bill Baker
House of Representatives

Dear Mr. Baker:

By letter dated November 8, 1995, and in subsequent discussions with your office, you requested that we review the costs associated with the Department of Energy's planned relocation of its National Energy Research Supercomputer Center from the Lawrence Livermore National Laboratory to the Lawrence Berkeley National Laboratory. Specifically, you asked that we (1) provide information on the estimated costs for operating the center at each location and (2) identify possible additional costs that may be incurred in the relocation as the Department's plans become more definitive.

BACKGROUND

Since its inception in 1973, the supercomputer center has been at Livermore, California. It is housed in a two-story building opened in 1980, and most of the equipment is in a room of approximately 14,000 square feet. The rest of the facility houses personnel and administrative operations for the supercomputer center. At Berkeley, the center will be on four floors with several computer rooms totaling 15,500 square feet. The Department's Energy Research Program primarily funds both the supercomputer center and the Berkeley laboratory. The Livermore laboratory is primarily funded by the Department's Defense Programs. Even though Livermore is primarily funded by Defense Programs, it had \$118 million of Energy Research Program funds available for fiscal year 1995. Of this amount, \$56 million was for the supercomputer center.

In early fiscal year 1995, the Energy Research Program informally asked the Director of the Berkeley laboratory if consolidating operations by moving the supercomputer center to this laboratory would be cost-effective. Preliminary cost estimates indicated that Berkeley could operate the center more cost-effectively. Therefore, in April 1995, the program decided to consider alternatives for operating the supercomputer center and asked both laboratories to develop proposals for its operation through the year 2000. The proposals were to address the following six criteria:

- the benefits to the Energy Research Program,
- the cost savings in order to operate with 15 percent to 20 percent less funding starting in fiscal year 1997,
- the impact on the missions through interdisciplinary internal and external collaborations,
- the laboratory administration and management's support and commitment,
- the technical approach for and feasibility of the proposed operations and research activities for meeting future requirements and pursuing technology innovation within future constrained budgets, and
- a demonstrated capability to integrate future technological advances to support the requirements of energy research computing and communications in the 21st century.

The two laboratories submitted their proposals in May 1995. They were subsequently evaluated by a panel, which included outside experts. In July 1995, the program asked each location for a revised proposal and gave each laboratory additional guidance. Each laboratory received some of the same questions and additional questions tailored to the analyses of its original proposal. The revised proposals were evaluated by a new panel, which again included outside experts. In November 1995, the program announced its decision to move the supercomputer center from the Livermore laboratory to the Berkeley laboratory. The move is expected to occur during 1996.

COSTS ARE RELATIVELY THE SAME FOR BOTH LABORATORIES' OPERATIONS

The Department's Associate Director, Office of Computational and Technology Research, told us that the move to Berkeley is expected to improve the center's technical performance and that cost was only one of the six criteria that his office used to evaluate the proposals. Furthermore, cost was considered a boundary criterion; that is, each laboratory had to prepare cost estimates that were 15 percent to 20 percent lower than Livermore's new fiscal year 1995 funding.

Because the laboratories' proposals were developed within the cost-boundary criterion, they are relatively similar. However, the Berkeley laboratory plans to provide more personnel than the Livermore laboratory, partly because Berkeley will use nine graduate students, who are less costly, to supplement its staff. Table 1 compares the costs and number of personnel (measured in "full-time equivalents") for the laboratories for fiscal years 1997 through 2000.

Table 1: Comparison of Annual Costs and Personnel for Operating the Department's Supercomputer at the Livermore Laboratory and at the Berkeley Laboratory, Fiscal Years 1997-2000

Dollars in thousands

Costs	Livermore	Berkeley
Personnel	\$12,775	\$12,071
Lease/maintenance costs for computer equipment	16,635	16,034
Other operating	6,635	8,295
Capital equipment	1,738	2,000
Total cost	\$37,783	\$38,400
Number of personnel (full-time equivalents)	84.5	94.7 ^a

^aBerkeley's number of personnel differs from the number in its proposal because Berkeley did not include full-time equivalents for the director and administrative personnel in its proposal. However, the costs for these personnel were included in the cost proposal. Since Livermore did include the number and cost of these personnel in its figures, we added five more full-time equivalents for the director and administrative personnel to Berkeley's number.

RELOCATION COSTS MAY BE HIGHER THAN ESTIMATED

While the Berkeley laboratory estimated that it will cost about \$4.37 million to relocate the supercomputer center, other actions and decisions may affect this estimate. Table 2 presents Berkeley's estimated cost to relocate the center.

Table 2: Estimated Cost to Relocate the Supercomputer Center to the Berkeley Laboratory

Dollars in thousands

Category	Estimated cost
Supercomputer relocation	\$312
Communications equipment relocation	105
Personnel relocations	545
Office space preparation	983
Computer room & support space preparations	1,765
Capital equipment	659
Total	\$4,369

Although the Department has formed a transition team, it has not yet arrived at a final estimated relocation cost, nor have decisions been made that could increase this cost, as cited in the following examples:

- While the cost to move about 220 people within the Berkeley facility is included in the estimate, further personnel moves may occur. At this time, we do not know if the additional moves will take place and whether they should be attributed to the center's relocation. Independent of this move, the Berkeley laboratory was considering seven different scenarios for moving personnel to consolidate various departments. For example, the relocation would displace about 100 members of the physics department, and the cost of their relocation is included in the estimate. However, the physics department is considering additional relocations to consolidate the department. Berkeley plans to finance these moves with existing funds from the Department, and it does not believe that these costs should be attributed to the center's relocation.
- If consolidation is cost-effective, Berkeley anticipates that it may need to consolidate the new center's personnel with those performing its current computing functions. This consolidation might result in additional relocation costs and a reduction in personnel. These changes are not reflected in Berkeley's proposal, nor is it known if additional funding will be needed from the Department. The Department believes that consolidation could increase efficiency and reduce future operations costs.
- The director of the center at Livermore was selected to be the director at Berkeley's supercomputer center. According to Berkeley officials, the new

director wants the cubicles at Berkeley replaced with offices. At this time, no decision has been made to make this change, nor is it known if additional funding for this change will be needed from the Department.

- The future use of Livermore's vacated facility has not yet been determined. The Department may need to incur additional costs to convert this facility for its new use.

AGENCY COMMENTS


We transmitted a draft of this report to the Secretary of Energy for review and comment. In response, the Associate Director, Office of Computational and Technology Research, provided technical clarifications that have been incorporated into this report.

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Our review focused on certain costs associated with operating and relocating the supercomputer center. We did not evaluate how well the other criteria were met in the two proposals. In reviewing the costs, we reviewed the two laboratories' proposals and interviewed officials responsible for preparing the information on costs. In addition, we met with officials in the Office of Energy Research who are responsible for the operation of the supercomputer center. We conducted our review in November and December 1995 in accordance with generally accepted government auditing standards.

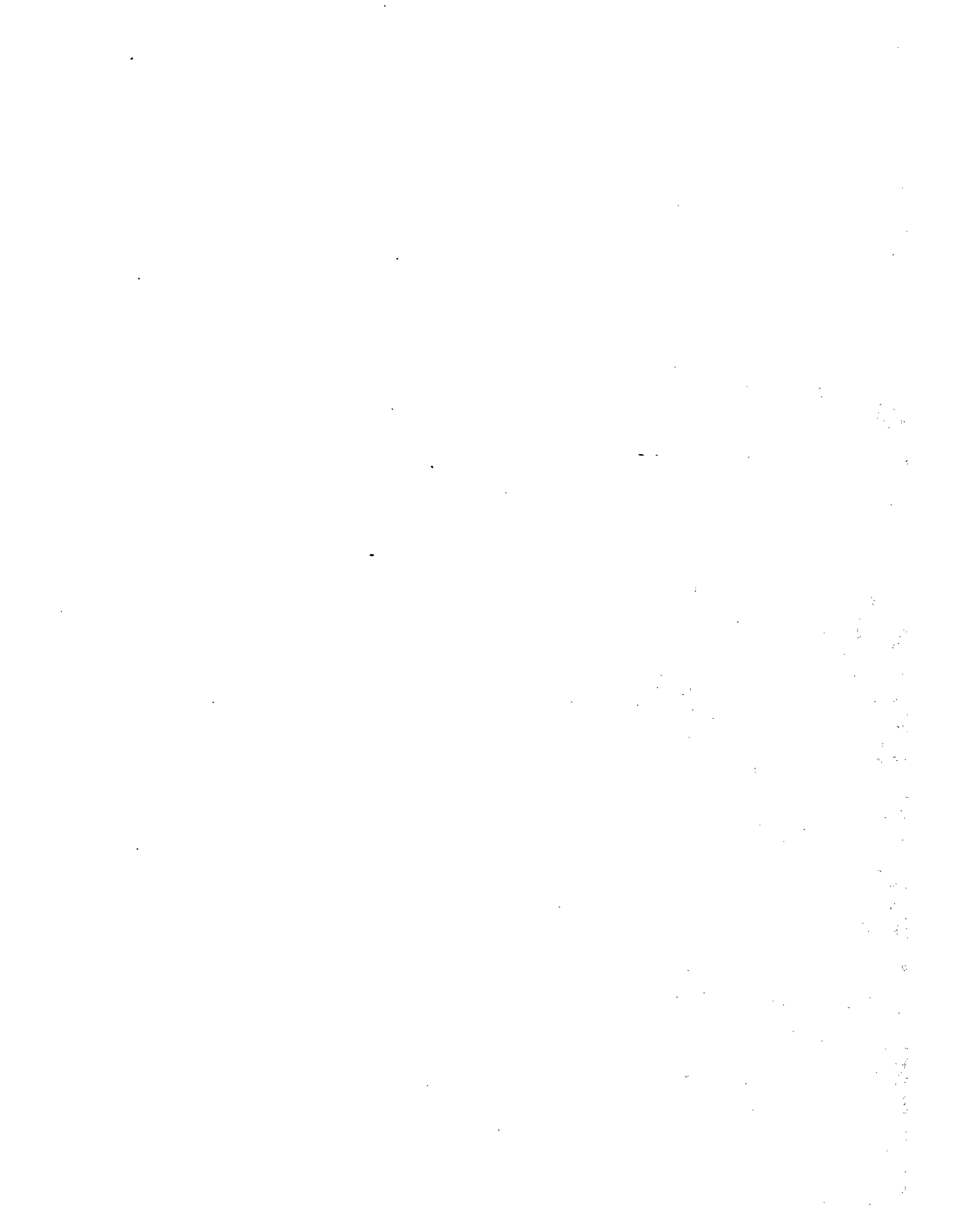
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Sincerely yours,



Victor S. Rezendes
Director, Energy and
Science Issues

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