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ABSTRACT

This report examines the current condition of university research facilities that are considered part of a college or university campus facility. The report reviews past and present federally sponsored programs designed to help the Nation's universities expand and modernize their research facilities. Recent surveys conducted by higher-educational associations and the Federal Government, to assess the current condition and construction of research facilities of the Nation's universities are also discussed. Finally, the report presents a number of different issues Congress may eventually have to address, in considering current university concerns about their research facilities. This document also contains appendices which include a list of research facilities surveys discussed in the report, and papers dealing with explicit rent charges, tax-exempt financing, university facilities audits, and universities receiving direct congressional approrpations for research facilities. (TW)

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[COMMITTEE PRINT]

BRICK AND MORTAR: A SUMMARY AND ANALYSIS OF PROPOSALS TO MEET RESEARCH FACILITIES NEEDS ON COLLEGE CAMPUSES

REPORT

PREPARED BY THE

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FOR THE

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TRANSMITTED TO THE

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HOUSE OF REPRESENTATIVES
ONE HUNDREDTH CONGRESS
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LETTER OF TRANSMITTAL

House of Representatives
Committee on Science, Space,
and Technology
Washington, DC September 10, 1987

To All Members, Committee on Science, Space, and Technology:

I am transmitting herewith a report, "Bricks and Mortar: A Summary and Analysis of Proposals to Meet Research Facilities Needs on College Campuses," prepared by the Congressional Research Service.

The report, is an excellent summary of the complex and important issue of funding university research facilities. It provides background information on the current condition of university research facilities, as well as past and proposed mechanisms to allocate federal funds needed to meet the research facility requirements of the Nation's colleges and universities.

I believe this report will serve as a valuable asset as we prepare to address this important issue. I commend it to your attention and the Members of the House of Representatives.

Sincerely,

ROBERT A. ROE
Chairman

RAR/Beg

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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WASHINGTON, DC 20515
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LETTER OF TRANSMITTAL

House of Representatives,
Committee on Science, Space,
and Technology
Washington, DC September 9, 1987

To The Honorable Robert A. Roe, Chairman:

I am pleased to transmit herewith a report. "Bricks and Mortar: A Summary and Analysis of Proposals to Meet Research Facilities Needs on College Campuses," prepared by the Congressional Research Service at the request of the Subcommittee on Science, Research and Technology.

The Subcommittee, alarmed by recent reports citing the deterioration of the Nation's university research facilities and recognizing its importance in the training of future generations of scientists and engineers, believed this issue merited a comprehensive review.

The report examines the numerous issues surrounding the funding and condition of the research facility infrastructure at colleges and universities. It includes a historical overview of the federal role in funding university research facilities, a review of various surveys that assessed the current condition of the university research infrastructure, as well as the overall impact of research facilities on education. Additionally, it provides a summary of recent congressional activities and various proposals being discussed to meet the facility requirements of colleges and universities, including the controversial strategy of obtaining facility funds directly from Congress.

I am sure this report will be a valuable resource to the Committee as we face the challenge of meeting the pressing needs of our Nation's university research infrastructure during this time of budgetary restraint. I commend it to you.

Sincerely,

DOUG WALGREN, Chairman
Subcommittee on Science,
Research and Technology

DW/Beg

(V)

Congressional Research Service
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Washington, D.C. 20540

LETTER OF SUBMITTAL

April 14, 1987

Honorable Doug Walgren
Chairman, Subcommittee on
Science, Research and Technology
Committee on Science, Space and Technology
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

We are very pleased to transmit this report entitled, Bricks and Mortar: A Summary and Analysis of Proposals to Meet Research Facilities Needs on College Campuses. The report was prepared at the request of the Committee on Science, Space and Technology, Subcommittee on Science, Research and Technology, and examines the current condition of university research facilities. As is characteristic of Congressional Research Service policy reports, programmatic and policy options are discussed impartially, but no recommendations are made.

This report was prepared by a team of CRS analysts under the coordination of Michael E. Davey, Analyst in Science and Technology. Edith F. Cooper, Analyst in Social Science, prepared chapter IV. Christine Matthews Rose, Analyst in Science and Technology, prepared chapter V. Mr. Davey prepared the rest of this study and edited the entire manuscript.

We appreciate having been asked to undertake this analysis of critical Government programs and policies in this vital area of university research. We hope this report meets the needs of the House Science Committee.

Sincerely,

Joseph E. Ross
Director

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

BRICKS AND MORTAR:
A SUMMARY AND ANALYSIS OF PROPOSALS TO MEET RESEARCH FACILITIES NEEDS ON COLLEGE CAMPUSES

Prepared at the request of the House Committee on Science,
Space and Technology
Subcommittee on Science, Research and Technology

Prepared by:

Michael E. Davey
Analyst in Science and Technology
and
Edith Fairman Cooper
Analyst in Social Science
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Science Policy Research Division

April 13, 1987

(IX)

CONTENTS

ABSTRACT

This report examines the current condition of university research facilities that are considered part of a college or university campus facility. The report reviews past and present federally sponsored programs designed to help the Nation's universities expand and modernize their research facilities. Recent surveys conducted by higher-educational associations and the Federal Government, to assess the current condition and level of research facilities construction activities of the Nation's universities are also discussed. Finally, the report presents a number of different issues Congress may eventually have to address, in considering current university concerns about their research facilities.

CHAPTER I. INTRODUCTION

In the past several years, there have been increasingly disturbing signs that higher education's infrastructure[1] for supporting research and development is deteriorating. The Nation's universities play a crucial role in support of America's research and development (R&D) enterprise. Universities now perform over half of all federally sponsored basic research[2], and 13 percent of all federally sponsored R&D.[3] Universities and colleges are also responsible for training the bulk of our future scientists and engineers, and professionals. Consequently, the ability of our institutions of higher learning to successfully carry out these responsibilities is a matter of great national concern.[4]

A number of different individual analysts and reports strongly suggests that the Nation's university research facilities are in such poor condition, that they undermine the universities' ability to

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[1] According to the National Science Foundation, infrastructure is defined broadly to include not only the supporting environment for academic research--the facilities, equipment, information resources, and institution relationships--but also the human resources that comprise the system--the faculty and graduate students. As implied, the infrastructure is taken to include not only support for current university research, but, the education and training of those who will do future academic research as well.

[2] Federal Funds for Research and Development: Fiscal years 1985, 1986, and 1987. v. 35. National Science Foundation. p. 52.

[3] Ibid., p. 13.

[4] Wilson, Linda S. The Capital Facilities Dilemma. In "The State of Graduate Education" Ed. Bruce, L. R. Smith. Brookings Institution. Washington, D.C. 1985. p. 121.

achieve their primary responsibility of teaching and research. In his book, Crumbling Academe, Harvey Kaiser, from Syracuse University, assess the current conditions of university facilities in the following manner: "The halls of academe are crumbling. Buildings, grounds, and utilities . . . are in dilapidated condition, endangering life and property. The vitality of the higher education enterprice is in jeopardy."[5]

The National Science Foundation's (NSF) recently released survey, on the condition of university research facilities, at 165 doctorate granting institutions challenges Kaiser's observations. According to NSF, the survey results suggest that despite the absence of an active Federal involvement in research facilities funding, the universities surveyed have embarked on a very aggressive mix of investment strategies in order to respond to their various research facilities needs. Further, the survey results indicate that over 80 percent of both private and public universities have been involved in or are planning new research facilities construction activities in the next three to five years.[6]

However, in general, the higher educational community is not happy with how NSF chose to interpret its survey findings. The academic community contends that NSF's report to Congress tended to accentuate the positive aspects of the data, while underplaying the data's negative implications.

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[5] Kaiser, Harvey H. Crumbling Academe: Solving the Capital Renewal and Replacement Dilemma. Washington, D.C. Association of Governing Boards of Universities and Colleges. 1984. p. vi.

[6] Science and Engineering Research Facilities at Doctorate Granting Institutions. National Science Foundation, Sept. 1986. p. 13.

Prior to World War II, the Federal Government played a limited role in the support of university research facilities. However, during and after the war, the Federal Government emerged as one of the primary supporters of university research facilities. The growth of Federal funding for university-based research, included helping to finance modern and expensive research facilities.

In 1942, Senator Harvey M. Kilgore, Chairman of the Subcommittee on War Mobilization, opened three years of hearings on the formation of science policy, but they did not address Federal Government support for research facilities. Further, Vannevar Bush's report, Science-The Endless Frontier, which established the postwar justification for Federal support of research, did not mention the subject of public support for research facilities.[7] Not until the 1947 Steelman Report, which examined the status of American science, were facilities discussed. The report recommended, "that the Federal Government provide aid to education institutions for the construction of facilities and the purchase of expensive equipment. A beginning was made on this with the disposal of surplus property. It must now be put on a long-run basis."[8]

In the 1956 Annual Report, Alan T. Waterman, the director of the National Science Foundation, (NSF) wrote that "when other sources are not available, the Federal Government must continue to provide funds for large scale facilities urgently needed for important basic

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[7] Stine, Jeffrey K. and G. A. Good. Government Funding of Scientific Instrumentation: A Review of U.S. Policy Debate Since World War II. Science Technology and Human Values, Summer 1986. p. 43.

[8] Ibid., p. 35.

research."[9] The NSF report indicated that the growing need for more sophisticated research facilities was a long term phenomenon that the Federal Government would have to respond to on an ongoing basis.

Consequently this report raised two new policy issues. First, the high cost of research facilities often exceeded the resources of universities and private funding, and would require the Federal Government to find resources to support this need. Second, and perhaps more important, it was found that the cost to maintain these facilities was higher than originally anticipated and that Federal funding policy should take these ongoing maintenance costs into account.[10]

Despite these early calls for Federal support, NSF data show that most direct support for construction and renovation of university research facilities has always been from non-Federal sources (e.g., State government, private giving, borrowing, and institutional funds). Federal tax policy, however, has encouraged private and institutional giving through foregone revenues. Nevertheless, with World War II and Korean veterans filling existing university classrooms and laboratory space, and the successful launch of Sputnik, direct Federal support of university facilities grew significantly. By the mid 1960s until the early 1970s Federal funding for university research facilities accounted for 25 to 30 percent of the total. Even at the greatest level of contribution, the direct Federal share never surpassed a third of the total.[11] NSF points out that these figures included the

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9 Ibid., p. 36.

10 Ibid.

11 The Adequacy of University Research Facilities. PRA Issue Paper 83-64, National Science Foundation. Feb. 8, 1984. p. 2.

cost of expensive research equipment as well. Recently released studies of Federal support for university research facilities estimate that the Federal share has now dropped to well below 10 percent of the total actual expenditures.

William D. Carey, Executive Officer for the American Association for the Advancement of Science, asserted that "postwar funding policies were critically flawed in that they ignored the requirements for reinvestment in infrastructure, with the result that a massive reinvestment deficit has accumulated with predictable costs and consequences downstream."[12] Along with Carey, others in the scientific community believe the Federal policy of trying to support the university infrastructure through individual project grants was a serious error. This approach allowed researchers to request funding for new research equipment, necessary to conduct their research, but made very little funding, if any, available for research facilities. Consequently, as many of the reports reviewed for this document have indicated, some of the Nation's universities now find that they have a large unfulfilled need for new academic research facilities.

While research instruments are the tools scientists use to gather data, facilities are the environment within which the instruments are used. These two aspects of the physical research infrastructure are in most cases interdependent. Modern research facilities not only provide a location in which to use research equipment, in many cases they provide a carefully controlled physical environment required for the successful operation of many state-of-the-art measuring devices.

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12 Stine and Good, op. cit., p. 35.

This report focuses on the current condition of university research facilities that are considered part of a college or university campus facility. The report does not discuss national laboratories that may be associated with a university, but are usually treated as a separate R&D facility, with its own budget and administrative staff.

Chapter two presents a number of different issues Congress may eventually have to address, if the universities are to overcome their current problems with research facilities. Chapter three of this report contains an executive summary of the major findings. Chapter four presents an historical overview of Federal support for university research facilities. Besides reviewing Federal funding trends for facilities, the chapter highlights some of the early university research facilities programs that were supported by the major Federal R&D agencies. Chapter five reviews recent congressional activities in the area of university research facilities. Specifically, the chapter summarizes recent congressional hearings that have been held to evaluate the current conditions of the Nation's academic research facilities, as well as legislative proposals designed to help the universities with their research facility needs. Chapter six reviews recently conducted surveys of academic research facilities, including NSF's September 1986 report to Congress, entitled, Science and Engineering Research Facilities at Doctorate-Granting Institutions. Chapter seven analyses a number of various proposals to help universities finance the construction and renovation of their research facilities. Chapter eight examines the growing practice of some universities to secure funding for research facilities by appealing directly to Congress and bypassing the peer review process. Finally, chapter nine, outlines the implications inadequate research facilities

may have for graduate and undergraduate education at the Nation's universities.

CHAPTER II. CONGRESSIONAL ISSUES: OPTIONS FOR ACTION

The current state of university research facilities raises several potential policy concerns for Congress. Essentially these policy concerns center around the following set of questions:

1. What should be the ongoing Federal role in assisting with the funding of university research facility construction activities?

2. Do the data contained in NSF's Doctoral Granting survey adequately portray the level of need required to elevate university research facilities to world-class-levels?

3. Is the traditional peer review process appropriate for determining which facility projects should receive Federal funding?

4. What are appropriate measures to determine the extent to which outdated university research facilities threatens America's ability to compete on an international basis with other technologically advanced nations?

There is general agreement in the academic community, though not necessarily within the Federal Government, that the current Federal approach of using individual-investigator grants as the primary mechanism to ensure an adequate research facility base is not realistic. The universities recognize that funding for university research facilities will have to come from a variety of different sources, including the Federal Government. For the period following World War II, the Federal Government traditionally, directly supported 65 percent of the cost of instrumentation and 20 percent of the cost of R&D plant. This policy changed in the late 1960s primarily because of controversy over grants to church-related universities and

difficulties in coming up with a geographically equitable distribution of grants. Critics contend that the current level of Federal support is not adequate. The basic questions are : What is the proper Federal role? What are the different mechanisms through which the Federal Government can carry out that role? Are the current levels of Federal support appropriate? To address these questions it might be helpful to review different mechanisms the Federal Government might utilize to assist universities in meeting the research facilities needs.

A number of university officials, for example, have recommended that Congress establish a separate budget category for university research facilities funding. They contend that the cost of constructing and maintaining research facilities should be entirely separate from budget categories associated with Federal support for university research and development. Linda S. Wilson commented on the current Federal approach:

> As the project system now operates, firm commitments of support are rarely given for longer than one year, and planned commitments are often given for only three years, rarely for more than five years. The system requires accountability by discrete project. Neither of these features ideally ensures adequate infrastructure. Both approaches encourage narrow focus and short-term effectiveness; infrastructure requirements are usually broad and long term.[13]

The University Research Facility Revitalization Act of 1985 (H.R. 2823), introduced by former Congressman Don Fuqua, is one approach the university community believes should receive cc ressional support. The academic community believes passage of a bill similar to Fuqua's proposal would re-establish direct congressional responsibility for helping to maintain and update the Nation's

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[13] Wilson, p. 123.

university research facilities. The intent of Mr. Fuqua's bill recognized the long term nature of the facilities problem; it would have provided up-front capital many universities do not have access to; it required matching funds from non-Federal sources; it gave the six major Federal R&D agencies legislative authority to fund facilities projects; (only NIH had such authority) and it required peer review for all university requested facilities projects.

The major concern for Congress is how to fund such a program. In general the university research community does not want to see research funds sacrificed to support a Federal facilities program. Nevertheless, Congress must make spending choices among many worthwhile programs, but it may not be possible to fund both because of current budget constraints.

Another approach supported by some university officials is the establishment of an independent nonprofit corporation to provide low-rate loans, loan guarantees, and other financial assistance to universities for facilities construction. Congress has already passed a similar proposal when it created the College Construction Loan Insurance Association (CCLIA). The major concerns the academic community has with the CCLIA, is that it targets universities that are "non-investment grade,"[14] and that the current $50 million annual funding level is inadequate. University representatives believe all academic institutions should be eligible to participate and that Congress should consider a one time Federal appropriation of perhaps $500 million in order to leverage a pool of money large enough to meet

[14] Investment Grade refers to an academic institution's level of credit calibre. Universities classified as "non-investment grade" are considered poor credit risks and may not be able to borrow capital for facilities activities.

the requirements of all universities. However, the results of NSF's Doctoral Granting Survey may justify congressional support of a targeted facilities program. The survey indicated that the top 50 R&D schools account for over 60 percent of all planned construction activities between 1987 and 1991.

These two approaches loom more important in light of the recently passed tax law, which could reduce access of private universities to up front capital necessary to begin facilities construction. Congress may wish to examine whether the capping of tax-exempt bonds and subjecting certain categories of private donations to universities to minimum taxation may eventually place private universities at an unfair disadvantage in trying to compete with the public universities for Federal research dollars. Private universities, over the next five years, are planning to fund 81 percent of their future facilities projects with tax-exempt bonds and private donations/endowments, (tax-exempt bonds 32 percent and private giving 49 percent) up from 42 percent of current facilities funding.[15]

Congressional consideration of re-establishing a major Federal role to support research facilities would probably raise the question of how such a program would be administered. Congress could consider a number of approaches. However, most of the facilities reports support either a centralized or decentralized approach.

Those recommending a centralized approach have suggested that NSF be the coordinating agency. They point out that NSF has a long and close working relationship with the academic community, a history of managing similar programs (e.g., past facilities programs and its

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15 NSF's Doctoral Granting Survey, p. 17.

current instrumentation program) and strong support for the peer review process. A decentralized approach would place responsibility for supporting a facilities program with each of the six major Federal R&D agencies. Those who support this approach contend, that besides just supporting basic research, NSF research interests are too narrow for such agencies as DOD and DOE. Congress may wish to request that OSTP coordinate such a program since it already works with the six major research agencies on a variety of different programs.

Many in the academic community believe that Congress should raise the current use allowance rate for research facilities from 2 percent to 5 percent per year.[16] Primarily because university research administrators argue that the useful life span of a research facility is now closer to 20 years, rather than the 50 years the current use allowance rate acknowledges. This adjustment could possibly provide universities with additional sources of revenues necessary to help pay off their current and future facilities related debt, such as tax-exempt bonds.

It now appears that NSF's doctoral granting survey may have raised as many questions as it answered. Individual analysts and numerous educational associations argue that Congress should request that NSF obtain an independent analysis of its next facility survey questionnaire, which is currently being prepared for NSF's 1988 facilities report to Congress. The major purpose of such an analysis would be to determine if the survey is adequately designed to provide reliable information on the current condition of university research

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16 Use allowance or depreciation is compensation for the use of an institution's buildings and equipment when conducting federally sponsored research, provided the facilities are used for institutional activities and are properly allocable to sponsored agreements.

facilities. The review would also examine the extent to which the questionnaire will provide information on how well universities are capable of meeting their research facility needs. Some members of the academic community also believe NSF's survey would be a much more reliable instrument if they had an opportunity to make suggested revisions in the survey as well.

If Congress were to re-establish a university research facilities program, a major question that would have to be addressed is: what kind of peer review system should be established to award Federal facility funds? Are new mechanisms required to establish priorities to allocate resources for the costs of research, including the costs of providing research facilities? The University Research Revitalization Act of 1985 states funds should be awarded on a "competitive basis," utilizing three criteria:

1. The quality of the research and training to be carried out in the facility;

2. The congruence of the institution's research activities with the future research mission of the awarding agency; and

3. The contribution which the project will make toward meeting national, regional, and State research and related training needs.

If a decentralized facility program were endorsed, each agency could convene various peer review panels of experts to help meet requirements one and two. If a centralized Federal facilities program, directed by NSF was operating then NSF would probably be able to convene various peer review panels. However, instituting a peer review system that incorporates a systematic assessment of national needs is a much more challenging task for Congress. One approach that might be considered is for Congress to ask such organizations as the

National Academy of Sciences or the National Science Board to sponsor series of meetings or workshops in order to establish priorities for national research facilities in various fields of science.

Ultimately, no matter what peer review process emerges, the university community has to recognize that a facility peer review process can only provide, at best, a very general evaluation of the potential for quality research to be performed in a particular facility. This was acknowledged by those university representatives who introduced the concept of "comprehensive merit review," when they stated that the

> . . . allocation process for research facilities is not exclusively the result of a competition among proposals for identical facilities . . . the process is the result of an evaluation on a case-by-case basis of technical merit, local capabilities and aspirations, and other factors . . . social, economic, and political.

Congress also may wish to examine further the effect outdated university research facilities may be having on the ability of the Nation's universities to produce top quality scientists and engineers. Concomitantly, Congress might want to further investigate if universities are currently being forced to foreclose on promising lines of scientific investigations due to inadequate research facilities, as some have asserted.

CHAPTER III. EXECUTIVE SUMMARY

This chapter presents highlights of the major findings of the different research facilities reports (listed in Appendix A) reviewed for this study regarding the current condition of university research facilities.

FEDERAL FUNDING

o Funding for major Federal programs for construction of university research facilities declined 85 percent in constant dollars between FY 1963 and FY 1984.

o The two largest federally sponsored research facilities programs were the NSF's Graduate Research Facilities Program and NIH's Health Research Facilities Program.

o Direct grants for graduate facilities ended in 1969 and for undergraduate facilities in 1973. In addition, more than 88 percent of Federal funds for direct loans for facilities construction was appropriated prior to 1970.

o Federal funding for university research facilities dropped in the late 1960s primarily because the Federal Government shifted its funding away from institutional facilities support, to providing financial aid to individual students.

o In 1981, the Association of American Universities reported that

academic institutions were able to address only 50 percent of the needs to renovate and modernize their research facilities.

o Direct Federal outlays for R&D plant, as a percentage of total Federal R&D, have declined from nearly 7 percent of the total in 1965 to less than 1 percent in 1983.

o A more recent and controversial source of Federal funds for facilities has come from various universities obtaining earmarked congressional appropriations (see Appendix E for list of such universities) for the construction or rennovation of their research facilities. In FY 1987, congressionally earmarked funds for university research facilities totaled approximately $145 million.

o Besides directly sponsoring Federal programs aimed at helping universities finance their facilities needs, over the past 40 years, the Federal Government has initialed a number of different mechanisms to help universities finance their facilities. These include, indirect cost recovery to universities in performing Federally sponsored research; tax incentives, such as individual and corporate deductions for charitable gifts to universities; and university access to the tax-exempt bond markets (see chapter VII); and the direct earmarked funding, from the Congress, (see Chapter VIII) for university research facilities.

o There is general agreement in the academic community that the current Federal approach of using individual investigator grants as the primary mechanism to insure an adequate research infrastructure is fundamentally flawed.

o NSF data and different facility surveys indicate that the majority of capital for construction and renovation of university research facilities has always been from non-Federal sources.

o There is consensus among University representatives that a number of different funding strategies, involving Federal, and State governments, industry, and the universities themselves, will be required if the Nation's universities are to successfully finance their current and future research facility needs.

o Despite strong protests from a number of higher educational organizations, congressional earmarking, for funding of specific university research facilities construction and renovation continues to grow.

FEDERAL LEGISLATION

o The National Cancer Institute Act of 1948, was the first post-World War II Federal statutory authority for financing construction as well as alterations and renovation of academic and related facilities at higher education institutions (42 USC 285). The Act also required "appropriate review for scientific merit and recommendation for approval by the National Cancer Advisory Board." (42 USC 286)

o Title VII of the Higher Education Act (HEA) of 1986 (P.L. 99-498) provides $25 million in grants for construction, reconstruction and renovation of undergraduate and graduate facilities. The upgrading deemed necessary by an institution must ". . . be essential to the continued utility of the research or instructional instrumentation and equipment."

o Section E of Title VII of the HEA authorizes the formation of the College Construction Loan Insurance Association, a partnership between the Federal Government, the private sector and interested

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institutions, to enhance the creditworthiness of colleges, in order to finance different construction activities.

o The Food and Security Act of 1985 (P.L. 99-198) establishes a new grant program for the 1890 land-grant institutions to upgrade their extension facilities. The Act provides $10 million for each of the fiscal years 1986 through 1990 for the purpose of assisting in the purchase of equipment and land, and the planning, construction, alteration or renovation of buildings.

o Provisions are contained in the Tax Reform Act of 1986 (P.L. 99-154) that will have a significant impact on colleges and universities. Of particular concern is that the legislation imposes a ceiling of $150 million on the amount of tax exempt bonds which any private institution of higher education could have outstanding at one time. Another major concern is that the repeal of the investment tax credit and the reduced depreciation allowance for companies might weaken the incentive for companies to invest in higher education.

o The University Research Facilities Revitalization Act of 1985, H.R. 2823, was introduced in the 99th Congress. Provisions within the legislation would authorize $10 billion over a 10-year period for the replacement or modernization of university or college obsolete laboratories and other research facilities ($5 billion in Federal funds redirected from elsewhere in the Federal R&D budget, and $5 billion in matching non-Federal funds).

o On April 1, 1987, Representative Robert A. Roe, chairman of the House Science, Space and Technology Committee introduced H.R. 1905 to assist in revitalizing the Nation's academic research programs. The proposed legislation would authorize the National Science Foundation (NSF) to spend $250 million per year, for the next ten years for the

repair, renovation, or replacement of laboratories and other facilities at colleges and universities.

NSF'S SURVEY OF DOCTORAL GRANTING INSTITUTIONS

o According to NSF's survey on Science and Engineering Research Facilities at Doctorate-Granting Institutions, in the academic year 1985-1986, the estimated costs to complete all facilities related construction work, including major repairs, upgrading and renovation, and new construction was $1.7 billion. The costs to complete work planned between 1986 and 1991 was estimated to be $5.8 billion. The top 50 R&D schools accounted for over 50 percent of the costs of total work in progress and over 60 percent of the estimated costs for planned work.[17]

o A majority of research administrators and deans did not believe the: "inability to obtain loans, restriction on the use of endowments and grants, legal restrictions, lack of campus space, and pressure to develop teaching rather than research capabilities, constrained their university from addressing its facility needs."[18]

o NSF's Doctoral Granting Survey estimated that the Federal Government now funds about 10 percent of the costs of facility construction and renovation, but is expected to provide only 6 percent of the total costs by 1991.

o The major sources of funds for research facility construction are State governments, and private donations and endowments, with

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[17] According to NSF the "Top 50" are the top 50 universities ranked in terms of Federal research and development expenditures in 1985.

[18] NSF Doctoral Granting Survey, p. 25.

public institutions relying primarily on the former and private institutions relying on the latter.

o The top 50 R&D schools were spending more than twice as much for both upgrading and renovation and major repairs, as those institutions below the top 50.

o Eighty-nine percent of research administrators report that the number of research projects at their universities are limited by facilities, and 92 percent indicated that the type of research project undertaken is facilities limited.

o Forty-two percent of the top 50 R&D schools list facilities limitations as their most pressing research related need.

o Ninety-five percent of the research administrators said they had less space than they needed, while 75 percent stated that additional research space was more critical than repairing or upgrading existing space.

o Approximately one-third of the research administrators and deans ranked facilities as the major problem facing research in the next five years: by fields of science physical sciences (59 percent), environmental science (47 percent), engineering (38 percent), medical sciences (36 percent), computer sciences (35 percent), and life sciences (33 percent).

o Forty-eight percent of research administrators rated their current research space as good to excellent, while 49 percent indicated their current space was fair to poor.

o In general, the university community has been critical of NSF's Doctoral Granting Survey. Essentially, they contend NSF's report to Congress tended to accentuate the positive aspects of the data, while underplaying the data's negative implications.

IMPACT ON EDUCATION

o Different analysts contend that perhaps the most serious impact of inadequate research facilities is that many universities are not able to recruit and retain the most productive faculty members and outstanding graduate students. Many universities have lost such people to private industry because of outdated research facilities.

o Nearly all of the analysts and reports assessing the quality of the Nation's research facilities suggest that these facilities are in such poor condition that they undermine the universities' ability to carry out successfully their primary responsibilities of teaching and conducting research.

o These same studies suggest that the current conditions of research facilities may have serious implications for the quality of future scientists and engineers produced by the Nation's universities.

CHAPTER IV. INITIAL GROUNDBREAKING: PAST AND CURRENT FEDERAL R&D FACILITIES PROGRAMS

INTRODUCTION

This chapter of the report provides a brief historical overview of Federal funding for university research facilities. Current initiatives of the National Science Foundation (NSF) and National Institutes of Health (NIH) programs are discussed, along with other smaller past facilities activities sponsored by the Department of Defense (DOD), the Atomic Energy Commission (AEC)/ Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), and the U.S. Department of Agriculture (USDA).

Funding for major Federal programs directly supporting construction of university research facilities declined 85 percent in constant 1982 dollars between 1963 and 1984. The two largest programs were the National Science Foundation's Graduate Research Facilities Program (1960-1970) and the National Institutes of Health's Health Research Facilities Program (1957-1972) discussed on p. 22-23. NSF's survey of Federal Support for research facilities as discussed in a General Accounting Office report,[19] indicates that much of the decline began around 1969 and 1970 when direct Federal funding for facilities

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19 U.S. General Accounting Office. University Funding: Federal Funding Mechanisms in Support of University Research. Report to the chairman, Committee on Science and Technology, [U.S.] House of Representatives. Feb. 1986. GAO/RCED-86-53, p. 44.

construction began to decrease because of the Government's shift toward other priorities.

TRENDS IN R&D FACILITIES FUNDING

The focus of this report is facilities, which consists of the actual buildings, laboratories, machine shops, and specialized technical operation facilities designed to accommodate and maintain research projects. Also, facilities involves (as the NSF definition for R&D plant indicates) the acquisition, renovation, modification, repair, and rental of buildings, land, works, or equipment for use in scientific or engineering research and development. By contrast, instrumentation includes the equipment and devices directly supportive of data acquisition and analysis.

The passage of the National Defense Education Act (NDEA) in 1958 marked a significant turning point in the relationship between the Federal Government and American higher education. The decade following the passage of the NDEA witnessed a steady stream of Federal legislation that expanded and redefined the relationship between the Federal Government and the higher education community.[20]

In December of 1963, President Johnson signed the Higher Education Facilities Act of 1963 into law. The new law provided for: 1) physical plant construction aid in the form of facilities for engineering, and library buildings; 2) a student loan program; and 3) grants to States for construction of community colleges, limited to

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20 Wilson, John T. Academic Science, Higher Education and the Federal Government 1950-1983. The University of Chicago Press. p. 47.

science, engineering, and library buildings.[21] Many educators believed that the passage of the facilities act, without any "national defense" overtones, represented a Federal recognition of the value of supporting higher education for its own sake.

During the 1960s, President Johnson made education a top social issue. One of the President's major objectives was to ensure that the Federal Government help provide greater access to a college education for individuals from all levels of our society. He said:

> I believe every child has the right to as much education as he has the ability to receive. I believe this right does not end in the lower schools, but goes on through technical and higher education-if the child wants it and can use it.[22]

Following this policy pronouncement, the Nation's universities and colleges turned to the Federal Government as a major source of funding for constructing various facilities to accommodate the large influx of college students in the 1960s. One mechanism used by the Federal Government to help universities and colleges with facilities funding were unrestricted institutional grants. As this chapter points out, however, both NIH and NSF provided institutional grants to the Nation's universities that were limited to the general support of science, including the construction of research facilities.

Between 1963 and 1967 funding for university research facilities remained stable, but with the election of President Richard M. Nixon, the Federal Government began shifting away from the support of institutional grants. Instead, the Federal Government focused its energies on providing aid to individual students. There were two major reasons for this policy shift. First, Federal institutional grants to

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21 Ibid., p. 48.

22 Ibid., p. 49.

private church-related universities raised serious constitutional questions regarding separation of church and State. And second, the inability of the higher education community to agree on an equitable geographical distribution of institutional grants, played a major role in Congress deciding to utilize individual student aid as a way to support higher education.[23] One of the major fallouts of this policy was a dramatic decline in direct Federal support for the construction of university research facilities.

For example, between FY 1963 and FY 1984, overall direct Federal funding for the construction of university and college research facilities showed a marked decline in both current and 1982 constant dollars (see table 4.1 and figure 4.1 for comparisons of current and 1982 constant). Total Federal obligations to universities and colleges for these purposes decreased from $325.0 million (all figures are in constant dollars) in FY 1963 to $45.9 million in FY 1984, an 85 percent decline in current and constant dollars.[24]

In FY 1965 Federal funding levels for facilities peaked at $373.9 million, and steadily declined to a low of $68.4 million in FY 1971. In FY 1972 funding increased to $80.1 million and climbed further again in FY 1973 to $89.5 million. By FY 1976, however, funding for facilities hit an all-time low of $38.4 million. Federal funds for facilities increased between FY 1982 and FY 1984 from $31.2

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23 Ibid., p. 59.

24 Source used for all subsequent information about R&D plant funding was taken from the NSF report, Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1984. Surveys of Science Resources Series, Detailed Statistical Tables, p. 18-19.

TABLE 4. Trends in Direct Federal Funding for Construction of University Academic Facilities, By Selected Agencies (Constant 1982 $) * (Dollars in Millions)

	Total, All Agencies	USDA	DOD	DOE	HHS	NASA	NSF
1963	$325.0	0.0	0.0	7.9	120.3	41.1	155.3
1964	304.9	0.0	0.0	12.1	120.7	27.5	144.6
1965	373.9	9.5	0.0	11.2	162.3	24.8	165.9
1966	330.4	5.7	0.0	21.3	139.6	21.3	141.9
1967	309.7	5.5	0.0	38.4	106.0	13.9	143.0
1968	258.4	5.1	0.0	31.9	99.2	0.0	121.8
1969	139.0	3.0	0.0	29.0	52.2	0.0	54.5
1970	108.0	2.6	0.0	17.1	48.2	0.0	39.7
1971	68.4	0.0	0.0	10.9	34.8	0.4	22.2
1972	80.1	0.0	0.0	8.9	48.1	1.3	21.7
1973	89.5	0.0	0.0	11.5	55.2	6.2	15.3
1974	55.5	0.0	0.0	8.0	27.7	0.1	19.5
1975	77.8	0.0	0.0	7.3	39.8	0.1	30.5
1976	38.4	0.0	0.0	9.0	18.3	0.1	9.5
1977	54.4	0.0	0.0	26.1	16.5	**	10.8
1978	47.8	0.0	0.0	18.6	13.8	0.0	15.3
1979	41.2	0.0	0.0	11.6	9.6	0.2	18.8
1980	44.6	0.0	0.0	24.3	5.1	0.2	14.8
1981	29.7	0.0	1.1	21.0	2.1	0.1	5.2
1982	31.2	0.0	0.5	18.8	5.4	0.2	4.9
1983	35.9	9.2	0.0	16.4	1.4	1.4	7.3
1984	45.9	8.8	0.0	27 2	0.6	0.2	8.9

* Calculated by CRS using figures from Table B-2 Federal Academic Science/Engineering Obligations to Universities and Colleges by Type of Activity and Agency: FY 1983-84. In NSF report, Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1984, p. 19. The table does not include indirect Federal funding, tax subsidies, and direct congressional appropriations.

** Amount less than $50,000.

million to $45.9 million. Such funding levels reflect a reversal in trends that may be welcomed by university research officials.

Most agency facilities funding levels have declined drastically since FY 1963 as table 4.1 indicates. NSF funding levels have decreased from an all-time high of 165.90 million in FY 1965 to $8.9 million in FY 1984, and all-time low of $4.9 million in 1982.

The Department of Health and Human Services funding level in FY 1963 was $120.3 million, but increased to an all-time high of $162.3 million in FY 1965, only .o decline to a low of $0.6 million in FY 1984.

The National Aeronautics and Space Administration's funding levels have decreased from $41.1 million in FY 1963 to $0.2 million in FY 1984.

The data in table 4.1 shows that the U.S. Department of Agriculture's FY 1965 funding level for facilities construction activities was $9.5 million. After declining to $2.6 million in FY 1970 such funding was eliminated until FY 1983 when facilities support reached $9.2 million.

As indicated in table 4.1, the Department of Defense did not research facilities activities until FY 1981 when 1.2 million was awarded. The only other funding, of $0.5 million, was allotted in FY 1982.

In addition, table 4.1 indicates that between FY 1963 and 1964, the Department of Energy's funding levels increased. In FY 1963, the funding level was $7.9 million. By FY 1977, funding rose to $26.1 million and climbed further to an all-time high in FY 1984 of $27.2 million.

A BRIEF SUMMARY OF PAST AND PRESENT FEDERAL FACILITIES PROGRAMS AT UNIVERSITIES

The following section presents a detailed analysis and funding history of the Higher Education Facilities Act of 1963 and its numerous amendments.

The Higher Education Facilities Act

As discussed earlier, the Higher Education Facilities Act of 1963 (P.L. 88-204), provided statutory authority for construction of academic facilities. It authorized assistance to public and other nonprofit institutions of higher education in financing the construction, rehabilitation, or improvement of needed academic and related facilities in undergraduate and graduate institutions.

Under Title I, Sec. 103 (a), "Allotments to States for Public Community Colleges and Public Technical Institutes," funds are allotted to States to be used in providing academic facilities for public community colleges and public technical institutes.

Sec. 106, "Eligibility of Grants," indicates that an institution of higher education, other than a public community college or public technical institute is eligible for a construction grant for an academic facility only if such construction is limited to structures, or portions thereof, especially designed for instruction or research in the natural or physical sciences, mathematics, modern foreign languages, engineering, or for use as a library. This restriction was eliminated through the Higher Education Facilities Act of 1965. Also, the Federal share was changed from a fixed rate of 40 percent to a rate not to exceed 40 percent.

In 1966, the Act was further amended to ensure that such facilities would be constructed for the accessibility and useability by handicapped individuals, in compliance with standards prescribed or approved by the Secretary of Health, Education, and Welfare.

Again in 1968, the Act was further reauthorized to be extended through the end of FY 1971. The eligibility for construction grants was broadened to cover construction of needed health care to students or personnel of the institution. Sec. 107 (b), "Basic Criteria for Determining Priorities and Federal Share," states that in case of a project for an institution of higher education other than a public community college or public technical institute, the Federal share shall not exceed 33 1/3 percent of its development cost, and in the case of a project for a public community college or public technical institute, the Federal share shall be 40 percent of its development cost. In 1968, amendments to this section increased the Federal share to 50 percent of the development costs for institutions other than a public community college or technical institute, and for a public community college or public technical institute construction project.

Amendments to the Act in 1965, 1966, and 1968 reauthorized appropriations through the end of FY 1968 to extend grants for the construction of graduate academic facilities and loans for construction of applicable academic facilities. The Education Amendments of 1972 (P.L. 92-318) transferred the provisions of the Higher Education Facilities Act (HEFA) of 1963 to title VII of the Higher Education Act of 1965. In FY 1973, the last construction grants were awarded.[25] The HEFA program was administered by the

[25] For additional information concerning further amendments to the Higher Education Facilities Act, see chapter 3 of this report.

Office of Education within the former U.S. Department of Health, Education, and Welfare.

Through the Education Amendments of 1976, title VII of HEFA was named "Construction, Reconstruction, and Renovation of Academic Facilities." Technical changes in the definition of the term "construction" were made and emphasis was placed on "conservation of energy resources, removal of architectural barriers, environmental protection, research facilities and special research equipment, and removal or containment of asbestos hazards."[26]

> The Education Amendments of 1980 (P.L. 96-374) authorized the use of construction funds for the removal or containment of asbestos hazards and the removal of architectural barriers for the handicapped, . . . restricted the use of funds to alleviating existing shortages of facilities (rather than projected or planned increases in capacity), and required that all Title VII program objectives have equal funding priority.[27]

In 1981, the Omnibus Budget Reconciliation Act prohibited appropriations for construction grants from FY 1982 through FY 1984.[28]

Under part A of title VII, as table 4.2 indicates, $300 and $100 million, respectively, were authorized at various times for construction grants for undergraduate academic facilities since FY 1974. No monies, however, have been appropriated for this purpose since FY 1973. Similarly, under part B of title VII, authorizations for construction grants for graduate academic facilities also have been made but no appropriations were granted between FY 1971 and FY

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[26] U.S. Congress. Senate. Committee on Labor and Human Resources. Reauthorization of the Higher Education Act: Program Descriptions, Issues, and Options. Prepared by the Congressional Research Service. Library of Congress. Washington, U.S. Govt. Print. Off., 1985. p. 279.

[27] Ibid., p. 282.

[28] Ibid.

1982. (See table 4.3.) Congressionally earmarked funding for FY 1983 was to be spent only for the Center for Advanced Technology at the University of New Hampshire and the Central Library at Boston University. Again, in FY 1984 no funding was appropriated for academic facilities construction. In FY 1985, however, $28 million was made available for both undergraduate and graduate facilities apparently rescinding the authorizing statute that stipulated funding use for graduate facilities only.[29]

Part C of title VII authorizes different kinds of loan provisions for academic facilities "to assist institutions in meeting unusual increases in enrollments and to support and expand the Nation's research facilities." Non-Federal sources must finance at least 20 percent of the total project costs. Since FY 1965, 660 institutions have received about $680 million in loan support through a revolving fund provided under part C. Only four new loans have been provided, however, since FY 1975 and all were initiated by Congress.

FACILITIES PROGRAMS SPONSORED BY FEDERAL R&D AGENCIES

During the 1960s, a number of Federal R&D agencies sponsored different programs aimed specifically at helping universities build or renovate their research facilities. The following section of this chapter presents a brief review of past and current facilities programs supported by various Federal R&D agencies.

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29 Ibid., p. 284.

TABLE 4.2. Appropriation History for Construction Grants for Undergraduate Academic Facilities, Currently Authorized under Part A of Title VII of the Higher Education Act (in millions)

Fiscal Year	Authorization	Appropriation
1964	$230	-0-
1965	230	$230
1966	460	458
1967	475	453
1968	728	400
1969	936	83
1970	936	76
1971	936	43
1972	50	43
1973	200	43
1974	300	-0-
1975	300	-0-
1976	300	-0-
1977	300	-0-
1978	300	-0-
1979	300	-0-
1980	300	-0-
1981	100	-0-
1982	100[a/]	-0-
1983	100[a/]	-0-
1984	100[a/]	-0-
1985	100	-0-
	1964-1985 Total -	$1,829

a/ P.L. 97-35 prohibited appropriations for part (graduate facilities) of title VII for FY 1982 through FY 1984.

Source: U.S. Congress. Senate. Committee on Labor and Human Resources. Reauthorization of the Higher Education Act: Program Descriptions, Issues, and Options. Prepared by the Congressional Research Service. Library of Congress. Washington, U.S. Govt. Print., Off., 1985. p. 283.

TABLE 4.3 Appropriation History for Construction Grants for Graduate Academic Facilities, Currently Authorized under Part B of Title VII of the Higher Education Act (in millions)

Fiscal Year	Authorization	Appropriation
1964	$25	-0-
1965	60	-0-
1966	120	$60
1967	60	60
1968	120	60
1969	120	50
1970	120	8
1971	120	-0-
1972	20	-0-
1973	40	-0-
1974	60	-0-
1975	80	-0-
1976	80	-0-
1977	80	-0-
1978	80	-0-
1979	80	-0-
1980	80	-0-
1981	80	-0-
1982	80[a/]	-0-
1983	80[a/]	22.5[b/]
1984	80[a/]	-0-
1985	80	28
	1964-1985 Total =	$288.5

a/ P.L. 97-35 prohibited appropriations for part B of title VII for FY 1982 through FY 1984.

b/ Funds were required to be spent only for the Center for Advanced Technology at the University of New Hampshire and the Central Library at Boston University.

National Science Foundation

Between 1960 and 1972, the National Science Foundation (NSF) initiated and conducted many institutional facilities construction and renovation programs to enhance research and education in various colleges and universities across the Nation. The programs were

carried out under a directorate headed by an Assistant Director for Institutional Programs. The first of such programs, discussed below, was called the Graduate Research Laboratory Development Program, later redesignated as the Graduate Science Facilities Program (GSF). Initially, because of a small budget, the program emphasized renovation instead of new construction. Later, as funding levels increased, more money was used for new construction projects.

The GSF received a $2.0 million budget in FY 1960. It was necessary for participating universities to contribute 50 percent in matching funds to be eligible to participate in the program. Also, the program was restricted to universities that offered doctoral work in science and engineering and to laboratories that conducted basic research.

In FY 1962, the GSF program was expanded to include institutions offering the master's degree as their highest degree awarded. In addition, the institution was permitted to spend up to 10 percent of the grant money for general-purpose laboratory equipment. In FY 1963, an NSF report states, "86 percent of the grant money was used for new construction. . . ." In addition, the average grant was slightly more than $200,000, and seven universities received grants of $1.0 million or more.[30] In FY 1964, funding peaked to $30.5 million and gradually declined to $4.0 million by FY 1970. During the 11-year period of the GSF program, $188.2 million was awarded in grants.[31]

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30 National Science Foundation. NSF Institutional Programs, 1960-72. Unpublished report. p. 2.

31 Ibid., p. 2. Also, FY 1970 figure noted from table I, Summary of GSF Proposals and Actions By Fiscal Year: FY 1960-1970.

Although the GSF program was terminated in FY 1970, NSF's Science Development program continued through FY 1972 providing funding for the building and renovation of university laboratories.

Initiated in 1964, the Science Development Grants (Centers of Excellence) was established to increase the number of institutions of recognized excellence in research and research education in the sciences. Universities received block grants awarded on a competitive basis, using the potential to develop research excellence as a primary criteria for the award; rather than the traditional criteria of existing research excellence of the $233 million dollars that was awarded to universities between 1964 and 1972, only 16 percent or $37 million was spent for facilities.[32]

Current Facilities Program

On September 27, 1985, Erich Bloch, NSF Director, announced NSF's policy on construction and renovation of research and education facilities is as follows:

> [P]rincipal responsibility for providing facilities for research and education remains with academic institutions. The Foundation will, however, consider limited support for facilities when a compelling case can be made.[33]

According to the notice that was given regarding this policy, currently, the Foundation's funds are constrained, and no new or special funds are expected to be available for facilities. In most disciplines, NSF plans to give consideration first to project support, then to major equipment and instrumentation, and then to facilities.

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[32] National Science Foundation Annual Report 1972. p. 82.

[33] National Science Foundation. Office of the Director. Important Notice to Presidents of Universities and Colleges and Heads of Other National Science Foundation Grantee Organizations. Policy on Construction and Renovation of Research and Education Facilities. Notice no. 98, Sept. 27, 1985. 1 p.

In areas in which research is especially dependent on specialized facilities, however, and a pressing argument is made that facilities are required in order to accomplish specific research or education objectives, facilities support will be provided.

Department of Defense[34]

The Department of Defense (DOD) has maintained a strong relationship with the Nation's universities since before World War II. During and after the war, DOD helped to finance major expansion of research facilities at several universities. Among main recipients of DOD funding were the Massachusetts Institute of Technology (the MIT Lincoln Laboratory was built in 1952 through DOD funding), Harvard, Columbia, the University of Chicago, the University of California, the Johns Hopkins University Applied Physics Laboratory, the California Institute of Technology, the Applied Physics Laboratory of the University of Washington, the Applied Research Laboratories of the University of Texas, the Applied Research Laboratory of Pennsylvania State University, and the Marine Physical Laboratory, Scripps Institute of Oceanography, University of California, San Diego. However, by the late 1950s, with the ceasing of military conflict and broadening Federal support of university research facilities, the Department of Defense ended its facilities support.

Following World War II, permanent working plans for defense investment in university laboratory facilities were established. For

34 All subsequent information regarding DOD was taken from the Department of Defense Report on Selected University Laboratory Needs in Support of National Security. Prepared for the Subcommittee on Research and Development of the Committee on Armed Services of the U.S. House of Representatives, Apr. 29, 1985. p. 6-7.

example, "the institute concept became well established, wherein non-profit university affiliated laboratories conduct applied research, primarily under DOD support."[35] Facilities of this post war era which currently make major contributions, are Lincoln Laboratories at MIT, which was constructed through DOD funds in the Johns Hopkins University Applied Physics Laboratory.

Current Facilities Program

Recently, DOD contended that the department should not be involved in supporting facilities. The Pentagon contends that Federal law prohibits DOD from getting involved in the actual building of university research facilities. As far as it is known, DOD is not currently funding any facility construction programs at colleges and universities.

Atomic Energy Commission/Department of Energy

In the early 1960s, the Atomic Energy Commission sponsored a "series of actions", to provide for or assist in the construction of specialized research facilities on various university campuses. Funding for the projects was provided usually through congressional mandates as budget-line items or costs were covered through a 10-year user fee.[36] Peer review regarding the feasibility of these projects did not occur.

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[35] U.S. Dept. of Defense. Selected University Laboratory Needs in Support of National Security. Prepared for the Subcommittee on Research and Development of the Committee on Armed Services of the U.S. House of Representatives. Apr. 29, 1985. p. 6.

[36] U.S. General Accounting Office. University Funding, p. 125.

Some examples of such actions include funding for construction of university accelerator facilities to build academic capabilities in nuclear science. No new construction for this purpose has occurred for 20 years. The Massachusetts Institute of Technology's Bates Linear Accelerator was built during the 1965-1972 time period. Through congressional action, AEC was budgeted $5.7 million for this project and MIT contributed $1.5 million. The current estimated replacement cost for this facility is over $60 million. Texas A&M's Cyclotron was funded in 1965 with a $1.0 million grant from the Welsh Foundation; $2.0 million from Texas A&M; and $3.0 million from AEC. Finally, Yale University's Heavy Ion Accelerator was built as a result of an additional congressional line-item to the AEC budget. Currently, it is no longer operating and has been dismantled.[37] These type of actions that are referred to as "direct appropriations or earmarked funding" which will be discussed in chapter VII of this report.

Current Facilities Programs

Currently, DOE has not initiated any university facilities programs. All projects that were funded between FY 1984 and projected to be funded through FY 1989 were congressionally mandated, through direct congressional appropriations.

Department of Health and Human Services (DHHS)

Since 1948, the Department of Health, Education and its successor DHHS has supported construction of health research

37 Ibid., p. 127.

facilities through various institutes within the National Institutes of Health (NIH). Initially, appropriations were made to the National Cancer Institute (NCI) and over the years, nine separate institutes have had authority to provide direct financial assistance for the construction, renovation, and/or replacement of health research facilities.[38] Currently, only three institutes continue to have such authority--The National Cancer Institute, the National Eye Institute (NEI), and the National Heart, Lung and Blood Institute (NHLBI).

All programs established, except one have been specifically for construction, renovation, and replacement of cancer, eye or heart research facilities, mental retardation centers, primate research centers, medical library facilities, and others. The exception was the Health Research Facilities Act of 1956 that broadened funding authority to include "the construction, renovation, and replacement of non-federal health-related research facilities with no limitation as to areas of health-related research or type of facility."[39] This program is stated to have played a significant role in developing the Nation's biomedical research abilities.[40] Funding for the program ended in 1972 with a total funding effort of $535 million.[41]

Grants were used to fund nearly all construction projects. The Health Research Facilities Act required a 50/50 matching grant program between the Federal Government and the educational institution. In

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38 U.S. Dept. of Health and Human Services. Public Health Service. National Institutes of Health. Research Facilities, by Thomas E. Malone, Deputy Director, NIH. Feb. 1985. p. 2.

39 Ibid., p. 3.

40 Ibid.

41 U.S. General Accounting Office. University Funding, p. 121.

the construction of mental retardation centers and medical libraries, however, the Federal Government covered up to 75 percent of the costs.[42]

Subsequently, however, funding to support construction became competitive with support for research funding because appropriations were not specifically earmarked for construction. As a result, the construction authority of NHLBI and NEI was not used. Also, a steady decline in the amount of NCI support for construction occurred.

The National Cancer Institute (NCI)[43]

The National Cancer Act of 1971 established the cancer research facilities construction program at NCI.[44] According to a spokesman at NCI, all money allotted for construction purposes was for cancer research activities. The NCI Construction Program, is administered by the Research Facilities Branch of NCI which provides matching funds to grantee institutions.

From FY 1972 to 1978, NCI provided 75 percent of the costs for construction projects. The grantee institution had to provide 25 percent from non-Federal sources. In February 1978, this process changed with an agreement for 70/30 contributions from the agency and the grantee institution.

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42 U.S. Dept. of Health and Human Services. Research Facilities, p. 2.

43 All information, except the first sentence, received during a telephone conversation with a spokesman at NCI on May 13, 1986.

44 Taken from unpublished paper entitled, "Facilities Funding Programs," p. 1.

From FY 1972 to FY 1984, NCI awarded 109 construction grants and funded $219 million in construction grant funds.

The National Eye Institute (NEI)

Prior to FY 1982, NEI had not used its funding authority for construction of research facilities. In FY 1982, NEI awarded 14 grants for a total of $5.0 million to various universities for vision research facilities construction projects.[45]

The National Heart, Lung, and Blood Institute (NHLBI)

The NHLBI has had the authority to expend funds and award grants for the construction of health-related research facilities since 1948. Fiscal Year 1985 was the first time NHLBI acted upon such authority.

Current Facilities Programs

By 1985, a total of $882 million ($786 million in 1982 constant dollars) had been obligated by DHHS through NIH to fund major construction programs over its 36-year funding period. The largest amount (55 percent) was received by medical schools.[46] In FY 1985, NIH funded a total of $12.1 million through its extramural construction programs sponsored by the National Cancer Institute, the National Eye Institute, and the National Heart, Lung, and Blood

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[45] Information taken from a table (NEI Support for Construction Projects, Fiscal Years 1976 to Present, dated May 16, 1986) received from the National Eye Institute.

[46] Ibid.

Institute. The monetary breakdown for each institute is discussed below.

National Cancer Institute

In FY 1985, NCI spent $5.5 million and awarded five grants through the NCI Construction program. The spending level for FY 1986 is unclear because of the possible impact of Gramm-Rudman-Hollings budget law. An estimate for FY 1987 has not been determined.[47]

National Eye Institute

In FY 1985, NEI awarded 34 grants to various universities for construction of vision research facilities obligating, $3.3 million for the institute.[48]

The National Heart, Lung, and Blood Institute

In FY 1985, the funding level, $3.3 million was awarded on a competitive basis to support alterations, renovations, and the establishment of modern research facilities relevant to the biomedical sciences and related to research activities in heart, lung, and blood diseases. Also, awards are issued on a matching basis. Eight universities were selected and allotted limited funding of $500,000 each for such construction.[49]

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47 All information received during a telephone conversation with a spokesman at NCI on May 13, 1986.

48 Information taken from Table 1, NIH Extramural Construction Obligations, FY 1948-1985, in the NIH report, Research Facilities, Feb. 1985.

49 National Heart, Lung, and Blood Institute. National Institutes of Health. Announcement and Guidelines. Request for Applications: Alterations and Renovations to Establish NHLBI Shared Research Facilities. RFA-85-HL-26. Dec. 3, 1984. p. 1.

For fiscal year 1986, about $3.2 million was allotted for support of renovation and instrumentation projects as well as projects that were carried over from FY 1985.[50]

National Aeronautics and Space Administration (NASA)

Between FY 1963 and FY 1968, NASA, through its facility grants program, funded a total of $43.3 million to award 37 grants to 34 academic institutions for the construction of research laboratories.[51] These facilities included Space Sciences Laboratories, Materials Research Centers, Biomedical Laboratories, and Propulsion Research Laboratories.[52] By the end of FY 1968, NASA's official university facilities grant program had been phased out.

Current Activities

From FY 1972 through FY 1984, NASA has provided line-item funding for the construction of facilities, as was deemed necessary, in relation to research conducted towards the mission of the agency. NASA does not have a separate university facilities program at this time.[53]

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50 Information received during a telephone conversation with a spokesman at NHLBI on July 29, 1986.

51 National Aeronautics and Space Administration. Office of University Affairs. Research Facilities Grants. p. 39.

52 U.S. Congress. Senate. Committee on Aeronautical and Space Sciences. Space Program Benefits: National Aeronautics and Space Administration. Hearings, 91st Cong., 2d Sess. Washington, U.S. Govt. Print. Off., 1970. p. 315.

53 Current information received through a telephone conversation with an agency spokesman on Sept. 12, 1986.

U.S. Department of Agriculture (USDA)

USDA Agriculture Research Facilities Act

From FY 1963 to FY 1970, the USDA funded a formula grant program to all agricultural experiment stations to build facilities. The total funding level for the program was $10.2 million. The program has not been reactivated since 1970 when the last award was given. 54

Current Facilities Programs

Cooperative State Research Service (CSRS)55

The CSRS supports a research facilities program designated for the 1890 Land-Grant institutions.56 In FY 1981, Congress authorized a grant program through Agriculture and Food Act of 1981 (P.L. 97-98, Sec. 1433) to provide research facilities for 1890 Land-Grant colleges and Tuskegee University. The grant program was to extend over a five-year period at a funding level of $10 million per year for a total of $50 million. Through this authority such institutions can purchase land and equipment, plan, construct, alter, or renovate buildings to strengthen their research capabilities in the food and agricultural sciences. Fiscal Year 1983 was the first year that funding was appropriated for this program. Additional funding was provided for FY 1984, 1985, and 1986.

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54 U.S. General Accounting Office. University Funding, p. 131.

55 Information for this section was taken from a memorandum dated June 18, 1986 from the Acting Deputy Administrator of CSRS.

56 In 1890, Congress passed the Second Morrill Act which required States with dual systems of higher education to provide land-grant institutions for blacks as well as whites. As a result, 16 black institutions were eventually established and designated as 1890 Land-Grant colleges.

The FY 1985 Farm legislation extended the research facilities program sponsored by the CSRS for 1890 Land-Grant institutions through FY 1987. Because of Gramm-Rudman-Hollings reductions however, the $10 million allotment as discussed above will be unavailable for FY 1987.

Also, CSRS is administering three additional grants. Through P.L. 99-190 (which provided FY 1986 continuing appropriations for the Agriculture, Rural Development, and Related Agencies Appropriations Act, 1986 and other such Acts) $596,400 was provided for a facilities planning grant to Tuskegee University and a $2.9 million planning grant to the University of Illinois. Also, through P.L. 98-151 (a continuing resolution of 1984) the University of Nebraska received $5.5 million to construct and equip a food processing transportation and marketing center, and $1.5 million to build a veterinary training facility.[57]

CONCLUSION

Traditionally the Federal Government has not been the primary supporter of university research facilities. Nevertheless, during the 1960s, Federal support for research facilities often provided the necessary seed money to help universities acquire financing to expand their research facilities. This expansion was primarily a result of surging student enrollments in the mid-to-late 1960s. However, by the late 1960s, Federal policy shifted from supporting large institutional grants in favor of individual student support. Concomitantly, it appears as if policymakers during the Nixon administration, believed

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[57] Information taken from a memorandum dated June 18, 1986 from the Acting Deputy Administrator of CSRS.

that the Federal Government had done more than its share of funding university research facilities. Consequently, beginning 1969, Federal direct funding for university research facilities experienced a significant decline that began to be restored in 1981.

In the 1960s, the majority of Federal research facilities funding was awarded through the different R&D agencies. Currently, the Federal Government is supporting a very modest research facilities effort. (In addition, congressional appropriations directed to specific universities are also supplying some facility funding as will be discussed below.) In FY 1985, Congress authorized the Department of Education to spend $28 million for research facilities, while in the same year, NIH spent only $12.1 million. Finally, in 1985 NSF announced it would provide limited support for universities research facilities, "when a compelling case could be made.' However, at this t ae, NSF has not funded any facilities activities within this announced program.

CHAPTER V. CONGRESSIONAL ACTIVITIES DURING THE 99th CONGRESS

INTRODUCTION

The deterioration of the physical plant infrastructure has become a problem for colleges and universities, reportedly making it more difficult to maintain the quality of academic research and scientific education. Academic facilities, including research and instructional equipment, often have been neglected in order to support increased energy costs, faculty salaries, and student services. In testimony before the House Committee on Science and Technology, Donald B. Langenberg, Chancellor, University of Illinois at Chicago, cited a recent estimate reporting that approximately 50 percent of the physical plant of all universities and colleges is more than 25 years old, with 25 percent of that having been built prior to World War II.[58]

The Federal Government invested heavily in research facilities and equipment in the 1960s, but by the early 1970s, the expansion slowed and then fell off drastically. Direct grants for graduate facilities ended in 1969 and for undergraduate facilities in 1973.[59]

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58 U.S. Congress. House. Committee on Science and Technology. The Federal Government and the University Research Infrastructure. Hearings, 99th Cong., 1st Sess., May 21, 22; Sept. 5, 1985. (Hereafter cited as the Federal Government and the University Research Infrastructure.) p. 207.

59 U.S. Congress. House. Committee on Education and Labor. Higher Education Amendments of 1985. Report to Accompany H.R. 3700. House Report No. 99-383, 99th Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 1985. p. 71. (Hereafter cited as Higher Education Amendments of 1985.)

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In addition, more than 88 percent of Federal funds for direct loans to facilities was appropriated prior to 1970.[60] Loans that were made since 1970 were earmarked by Congress for specific institutions.[61] In 1981, the American Association of Universities reported that academic institutions were able to address only 50 percent of their needs to renovate and modernize their research laboratories.[62]

Though amounts vary widely as to the present deficits of physical infrastructure, the need for new and renovated research facilities is estimated to be measured in billions of dollars. In testimony before the House Committee on Science and Technology, Bernadine Healy, former Deputy Director, Office of Science and Technology Policy, estimated that the costs of renovating and modernizing the university research infrastructure over the next 5 years range from $5 to $20 billion.[63] Another reported estimate is that for all of postsecondary education, facilities and equipment renewal and replacement needs would range from $30 billion to $50 billion.[64] Yearly ongoing absolute maintenance needs have been estimated at $5 to $6 billion.[65]

Frank B. Sprow, Vice President, Exxon Research and Engineering Company, reported that current Federal support provides approximately 17 percent of the estimated $2 billion spent annually for equipment

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60 Ibid.

61 Ibid., p. 71.

62 The Federal Government and the University Research Infrastructure, p. 207.

63 Ibid., p. 3.

64 Higher Education Amendments of 1985, p. 71.

65 Ibid.

and facilities.[66] The scarcity of Federal resources has prompted some universities to bypass the traditional peer-review system and lobby congressional members directly for funds. This particular issue will be discussed later in this report.

The present state of academic research facilities has evoked calls for Federal action from university officials and research directors. In response, members of Congress have proposed new legislation and amendments of existing laws aimed at providing funding for the renovation and construction of academic research facilities. This chapter summarizes legislative activities in the 99th Congress and selected policy alternatives for the support of research infrastructure of colleges and universities.

LEGISLATION

The 99th Congress considered a number of bills to provide funding for construction and renovation of research facilities at colleges and universities. The legislative activities discussed in this section include the Higher Education Amendments Act of 1985 (P.L. 99-498), the University Research Facilities Revitalization Act of 1985 (H.R. 2823), the Health Research Extension Act of 1985 (P.L. 99-158), the High Technology Morrill Act (S. 935), the High Technology Research and Scientific Education Act of 1985 (S. 58, H.R. 1188), the Food Security Act of 1985 (P.L. 99-198), the Trade Development Investment Act (H.R. 4719), America's Living Standard Act of 1986 (S. 2810), the

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66 The Federal Government and the University Research Infrastructure, p. 192.

Tax Reform Act of 1986 (P.L. 99-154), and the National Science Foundation Authorization Act for Fiscal Year 1986 (P.L. 99-159).

Higher Education Amendments of 1986 (P.L. 99-498)

The Higher Education Act (HEA) of 1965 (P.L. 89-329, as amended) authorizes a broad range of Federal postsecondary education assistance programs for both students and institutions. Since 1965 the HEA has been the major legislative initiative for financial aid to postsecondary students and institutions. The 99th Congress considered and passed major amendments to the HEA, which are contained in the 1986 reauthorization legislation, the Higher Education Amendments of 1986 (P.L. 99-498). The new legislation extends and amends HEA programs for 5 years through FY 1991.[67] Though there are multiple issues and programs addressed by the 1986 HEA Amendments, this report will give attention to Title III - Institutional Aid and Title VII-Construction, Reconstruction and Renovation of Academic Facilities. Both titles contain provisions dealing with the financing of academic research facilities and the acquisition of special research equipment.

The HEA's program of construction and renovation of academic facilities has its legislative origins in the Higher Education Facilities Act of 1963, P.L. 88-204. The act responded to a large enrollment increase in the colleges and universities in the early 1960s which threatened to overwhelm their facilities. Since 1963, comprehensive legislation and numerous other statutes have amended

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67 U.S. Congress. House. Higher Education Amendments of 1986. Conference Report to Accompany S. 1965. House Report No. 99-861, 99th Cong., 2nd Sess. Washington, U. S. Govt. Print. Off., 1986. 475 p. (Hereafter cited as Higher Education Amendments of 1986.)

portions of the HEA. For an analysis of the amendments and history of the legislation, see Reauthorization of the Higher Education Act: Program Descriptions, Issues and Options.[68] Following is a summary of the provisions of Title III and Title VII of the 1986 HEA. An analysis of the current legislation can be found in the CRS publication--Higher Education Act: Reauthorization Issues.[69] A comparison of the previous legislation and the current law is provided in Higher Education Daily - Special Supplement.[70]

Summary of Provisions

A brief description follows of the content of the two titles of the HEA about facility construction - Title III, Institutional Aid and Title VII, Construction, Reconstruction and Renovation of Academic Facilities.

Title III - Institutional Aid

Title III of the HEA, Institutional Aid was amended by combining the current Part A and Part B into a new Part A - Strengthening Institutions. The authorized funding would be used to improve academic quality, institutional management and financial stability of

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68 U.S. Congress. Senate. Committee on Labor and Human Resources. Reauthorization of the Higher Education Act: Program Descriptions, Issues, and Options. Committee Print. 99th Cong., 1st Sess., Washington, U.S. Govt. Print. Off., 1985. 494 p.

69 U.S. Library of Congress. Congressional Research Service. Higher Education Act: Reauthorization Issues. Issue Brief No. IB84070, by Susan Boren, Nov. 3, 1986 (continually updated). Washington, 1986. 23 p.

70 Higher Education Daily - Special Supplement. Capitol Publications, Inc. Oct. 1986. Alexandria, VA. 16 p.

institutions serving a large percentage of disadvantaged students. Requirements for eligibility would include:

(1) Fifty percent of an institution's student body receiving need-based aid under Title IV; and

(2) A significant percentage of students receiving Pell Grants.

Part B of Title III, Strengthening Historically Black Colleges and Universities, authorizes the establishment of grants to improve the quality of historically black colleges. Grants would be provided directly to eligible institutions under a statutory allocation formula determined by the percentage of Pell Grant recipients at each institution, the number of students who graduate within five years, and the number of students who are accepted by graduate and professional schools.[71] The legislation allows that up to 50 percent of the funding could be used for constructing or maintaining a classroom, library, laboratory, or other instructional facility. In addition, this part stipulates that a proportion of the grants would be retained for graduate institutions.

Part C of Title III, Challenge Grants, remains similar to past legislation, authorizing 50-50 matching grants to assist institutions in gaining financial independence. The authorization for part A is $120 million; part B, $105 million (includes $5 million for graduate institutions); and part C, $20 million.

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[71] Eligible institutions include many institutions which are more than 100 years old, at least one established as late as 1963, one created in the 1940s, three whose student enrollments are no longer majority black and several historically black colleges which have (or will be) merged with traditionally white institutions. Higher Education Amendments of 1986. p. 367.

Title VII - Construction, Reconstruction and Renovation of Academic Facilities

Part A, Grants for Construction, Reconstruction and Renovation of Undergraduate Academic Facilities, Part B, Grants for Construction, Reconstruction and Renovation of Graduate Facilities, and Part C, Loans for Construction, Reconstruction, and Renovation of Academic Facilities are reauthorized at $15 million, $10 million, and $25 million respectively, for FY 1987 and such sums as may be necessary for each of the 4 succeeding fiscal years. The legislation allows that a maximum of 10 percent of the funding in parts A, B, and C be used for instructional or research equipment and for providing a suitable environment (upgrading facilities) for such equipment. The upgrading deemed necessary by an institution must " . . . be essential to the continued utility of the research or instructional instrumentation and equipment."[72] (Part A has not been funded since 1973.)

A new Part D of Title VII, Grants to Pay Interest on Debt authorizes a program of interest grants to assist higher education institutions and building agencies in reducing the cost of borrowing from other non-Federal sources for projects that are partially funded through part C loans. A limitation of $13.5 million is placed on the total amount of annual interest grants which may be paid to institutions and building agencies within a given year.

A new Part E of Title VII of the HEA, College Construction Loan Insurance Association (the Corporation), authorizes the establishment of a joint venture among the Secretary of Education, the Student Loan Marketing Association and interested individuals in the public and

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[72] Higher Education Amendments of 1986, p. 440.

academic community. It was authorized $20 million for FY 1987. It is designed to guarantee and insure bonds and loans for the construction and renovation of academic facilities primarily for those institutions that cannot obtain financing in the private market. The current means of financing facilities construction and maintenance are limited to internal funding, borrowing, indirect costs and capital gift campaigns, none being a viable means of financing significant investment in plant and equipment for the majority of universities.[73] It was found that borrowing was used by only a small percentage of higher education institutions and that bank financing options, short-term in nature, were not conducive to construction. In addition, academic institutions' investment in the tax-exempt bond market, while serving as a necessary source of capital for higher education, was limited to "investment grade" as characterized by the bond rating agencies.[74] The need for credit was recognized by those institutions that were "non-investment grade" yet fundamentally sound. The House Committee on Education and Labor proposed a Federal/private partnership (private for-profit corporation) whose purpose would be to " . . . enhance the credit quality of non-investment grade but fundamentally sound educational institutions seeking funds for facility construction, capital improvement, scientific instrumentation and related equipment used for the purposes of higher education and training."[75]

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[73] Higher Education Amendments of 1985, p. 72.

[74] Investment grade refers to academic institutions considered to be of the highest credit calibre.

[75] U.S. Congress. House. Committee on Education and Labor. Higher Education Amendments of 1985. Report to Accompany H.R. 3700. House Report No. 99-383, 99th Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 1985, p. 70.

Part F of Title VII, Housing and Other Educational Facilities Loans reauthorizes loans to assist undergraduate postsecondary educational institutions for constructing, reconstructing, or renovating housing, academic facilities, or other educational and research facilities. One requirement of this part is that the educational institution seeking a loan is unable to secure construction funding from other sources of similar terms and conditions.

Part C of Title VII, Special Programs authorizes the provision of financial assistance for the purpose of construction and renovation to the following institutions: Bethune Cookman College, $6.2 million; Eastern Michigan University (Welch Hall), $2.0 million; Rochester Institute of Technology, $1.8 million; and Shaw University (Estey Hall), $550,000.

Health Research Extension Act of 1985, P.L. 99-158

The Health Research Extension Act of 1985, P.L. 99-158, Title IV, National Research Institutes, Part C, Section 497, General Provisions, authorizes the receipt and acknowledgement of gifts ($50,000 or more) for acquiring grounds or for erecting, or maintaining facilities for the National Institutes of Health or a national research institute which may exist at universities. Gifts given in accordance with this section may also be used for equipment.

Food Security Act of 1985 (P.L. 99-198), Title XIV, National Agricultural Research, Extension, and Teaching Policy Act Amendments of 1985

Provisions are contained in the Food Security Act of 1985 (P.L. 99-198) for the U.S. Department of Agriculture to support academic agricultural research facilities for FY 1988 through FY 1990.[76] This Act authorizes funds for research facilities in the amount of $20 million for each of the fiscal years 1986 through 1990. Amendments contained in this section allow the funds provided under the Act to be used also for the acquisition of equipment. This section requires that the research dollars go only to those institutions committed to agriculture and related research. In previous legislation, institutions with an "adequate" research program could compete for funds. The funds are to be used for planning, constructing, and repairing buildings and for buying or leasing land by the Agricultural Research Service. Planning is limited to $500,000 and total cost is limited to $5 million.[77] A requirement is made that reports on construction activity by location be submitted to Congress within 60 days of the end of each fiscal year.

The Food and Security Act gives particular focus to the 1890 land-grant institutions by authorizing program grant awards to upgrade

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76 U.S. Congress. House. Committee of Conference. Food Security Act of 1985. Conference Report to Accompany H.R. 2100. House Report No. 99-447, 99th Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 1985. p. 203.

77 U.S. Dept. of Agriculture. Economic Research Service. Provisions of the Food Security Act of 1985. Washington, Apr. 1986. p. 61.

1890 extension facilities.[78] Since 1914, the 1890 land-grant institutions, including Tuskegee Institute, have assisted in the delivery of cooperative extension programs to eligible clients in 16 States. Both the Smith-Lever Act of 1972 and the National Agricultural Research, Extension, and Teaching Policy Act of 1977 provided program funding for facility construction at 1890 land-grant institutions. However, the facilities situation reportedly remains critical at these institutions.[79] Though the needs vary on the campuses, commonalities do exist, with such problems cited as:

(1) limited space in old buildings needing major renovation;

(2) expansion of present staff beyond facility capacity;

(3) need for facilities to expand State programs for such activities as conferences, fairs, livestock shows; and

(4) need for facilities to capitalize on new and emerging technologies.[80]

The Act establishes a new grant program to provide $10 million for each of the fiscal years 1986 through 1990, with such sums to remain available until expended. Approximately 4 percent of the funds would be available for administration of the program, with the balance available to eligible institutions for the purpose of assisting in the

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78 The passage of the Second Morrill Act in 1890 required States with dual systems of higher education to provide land-grant institutions for blacks as well as whites. As a result, some new public black institutions were founded, and some private black schools came under public control; eventually 16 black institutions were designated as land grant colleges.

79 U.S. Congress. House. Committee on Agriculture. Food Security Act of 1985. Report to Accompany H.R. 2100. House Report No. 99-271, 99th Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 1985, p. 119.

80 Ibid., p. 119-120.

purchase of equipment and land, and the planning, construction, alteration, or renovation of buildings, to provide adequate facilities to conduct extension work in a balanced way in meeting the needs of the people of their respective States. The Act stipulates that funds cannot be used for the payment of any overhead costs of the eligible institution.

Tax Reform Act of 1986, P. L. 99-154

On October 22, 1986, President Reagan signed into law the Tax Reform Act of 1986 (P.L. 99-154). Provisions are contained in the legislation that probably will have a significant impact on colleges and universities. Of particular concern is that the legislation imposes a ceiling of $150 million on the amount of tax exempt bonds which any independent institution of higher education could have outstanding at one time.[81] Another major concern is that the repeal of the investment tax credit and the reduced depreciation allowance for companies might weaken the incentive for companies to invest in education. In addition, the act makes charitable gifts of appreciated property liable to the alternate minimum tax. Prior to the passage of the tax legislation, charitable gifts were fully deductible, and were reported to account for 40 percent of private giving to both public and private colleges and universities. In a written statement, Robert M. Rosenzweig, president of the Association of American Universities

81 A tax exempt bond is a debt obligation issued by a State or local government or subdivision thereof, the interest of which is exempt from Federal income tax. Thomas Head- Association of American Universities. Telephone interview, Oct. 14, 1986.

and Robert H. Atwell, president of the American Council on Education, concluded that:

> . . . [H]owever one views the merits of the [act] in general, it will also seriously impair the ability of educational institutions to raise funds from private sources, exclude twenty or more major research universities from issuing tax-exempt bonds to finance instructional and research facilities, and tax the scholarships of students. The savings to the government from these provisions will be negligible; the damage to education and research will be substantial.[82]

National Science Foundation Authorization Act for Fiscal Year 1986, P.L. 99-159

The National Science Foundation Authorization Act for Fiscal Year 1986, Title I, Section 108, Data Collection and Analysis, authorizes the National Science Foundation (NSF) to design a data collection and analysis capability for the purpose of identifying and assessing the research facilities needs of colleges and universities. This action was requested because of lack of information in this area. Documentation of the needs of universities, by major field of science and engineering, would include expenditures for the construction and modernization of research laboratories, fixed equipment and major research equipment needs, and sources of funds. The survey, conducted every 2 years, would be the responsibility of the NSF and other appropriate agencies. This section required that the report be submitted to the Congress by September 1, 1986. A summary of the findings from the first survey of facilities needs can be found in chapter six of this report.

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82 Rosenzweig, Robert M. Association of American Universities and Robert H. Atwell, American Council on Education. Tax Bill Harmful to Colleges and Universities. News Release. Aug. 19, 1986.

High Technology Morrill Act, S. 935

The High Technology Morrill Act would have established a national technology education grants program for the purpose of providing matching Federal assistance to joint initiatives by private industry, educational institutions, and State governments. The Act specified that grants made under this act may be used for laboratory equipment and facilities in educational institutions and research/education centers for training new scientific, engineering, and technical employees while conducting applied research or stimulating innovation, technology transfer and the application of new technologies. Introduced in April 1985, this legislation was not acted on in the 99th Congress.

High Technology Research and Scientific Education Act of 1985, S. 58, H.R. 1188

The High Technology Research and Scientific Education Act of 1985, S. 58, amends the Internal Revenue Code of 1954 to make permanent the income tax credit for research and development (R&D). It would have allowed corporations income tax deductions for contributions of scientific and technical property to a higher education institution.[83] The legislation would have modified the charitable contribution deduction of corporations for scientific and technical property to:

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83 It defined scientific and technical property to mean tangible personal property used in a trade or business, which is donated for the direct education of students or faculty, for research and experimentation or for research training in the United States in mathematics, the physical, biological, or chemical sciences, engineering, or advanced computer sciences.

(1) expand the eligible uses to which the property may be put to include direct education as well as research and research training;

(2) make computer software eligible for the deduction; and

(3) make state-of-the-art equipment used in the taxpayer's trade or business eligible for the deduction.[84]

Introduced in January 1985, no action was taken on the bill after committee referral in the Senate in January 1985 and the House in February 1985.

Trade Development Investment Act, H.R. 4719

The Trade Development Investment Act, H.R. 4719, set forth provisions to enhance the competitiveness of the United States in international markets by increasing the public investment in education and training. Introduced in April 1986, no action was taken on the bill after its referral to the Subcommittee on Trade in May 1986. Subtitle B, Part 1, Replacement and Modernization of College Research Facilities - University Research Facilities Revitalization Act of 1986, required each of the major Federal research and development agencies to establish and conduct a new university research laboratory modernization program. The legislation defined the major Federal R&D agencies as: (1) the National Science Foundation, (2) the Department of Health and Human Services, (3) the Department of Defense, (4) the Department of Energy, (5) the National Aeronautics and Space Administration; and (6) the Department of Agriculture. Support would have been an amount equal to a specified portion of the funds

84 Danforth, John C. Remarks in the Senate. Congressional Record., Daily Edition, v. 131, Jan. 3, 1985. p. S176.

available to the agency involved for R&D awards to colleges and universities and would have been reserved for the replacement or modernization of such institutions' obsolete laboratories and other research facilities. Funds would have been awarded in response to specific proposals submitted by the institutions and on a competitive basis in an amount not exceeding 50 percent of the cost of the replacement or modernization involved. Authorizations for H.R. 4719 were $465 million, with $100 million directed to the NSF. The legislation would also have transferred $50 million to the NSF under Title 1 of the Education for Economic Security Act, and provide for tax incentives for qualified organizations to support basic research.

America's Living Standard Act of 1986, S. 2810

The America's Living Standard Act of 1986, S. 2810, set forth various provisions to promote economic competitiveness in the United States. Of particular importance to higher education was Title V, University Research Fund, which required awards to be made to institutions of higher education for the Federal share of the cost of acquiring, replacing, renovating, upgrading, or constructing facilities and equipment to be principally used for scientific research or laboratory instruction. Restrictions contained in the legislation stipulated that not more than 50 percent of the amount of each award be used for permanently installed experiment equipment and that not more than 25 percent of any such award be used for the purchase of stand-alone equipment. Any college or university receiving an award was required to provide matching funds derived from a non-Federal source. The legislation authorized $250 million to be

appropriated for the fiscal year ending September 30, 1987, and each fiscal year there after ending prior to October 1, 1987.

Research Facilities Revitalization Act of 1985, H.R. 2823

On June 20, 1985, the University Research Facilities Revitalization Act of 1985, H.R. 2823, was introduced by Representative Don Fuqua, chairman, House Science and Technology Committee. Provisions within the legislation would have authorized $10 billion over a 10-year period for the replacement or modernization of obsolete university and college laboratories and other research facilities ($5 billion in Federal funds redirected from elsewhere in the Federal R&D budget, and $5 billion in matching non-Federal funds).[85] The funds would have been distributed among the six major Federal research and development (R&D) agencies, the National Science Foundation (NSF), the Department of Health and Human Services (DHHS), the Department of Defense (DOD), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), and the Department of Agriculture (USDA). The agencies would have had discretion in implementation of the facility modernization programs, which could include mixed-use structures (facilities used for both research and instruction).

The six agency program would have been within the jurisdiction of four committees, the House Committee on Agriculture, Armed

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85 U.S. Congress. House. Committee on Science and Technology. Subcommittee on Science, Research and Technology. H.R. 2823 - The University Research Facilities Revitalization Act of 1985. Hearings on H.R. 2823, 99th Cong., 1st Sess., July 30; Oct. 22, 24, 30, 1985. Washington, U.S Govt. Print. Off., 1986. p. 7. (Hereafter referred to as H.R. 2823--The University Research Facilities Revitalization Act of 1985.)

Services, Energy and Commerce, and the House Committee on Science and Technology. For FY 1987, the first year of the 10-year modernization program, authorizations to the major Federal R&D agencies would have been proportional to each agency's current obligations for R&D to universities and colleges. The total FY 1987 authorization was requested at $470 million: NSF, $100 million, NIH, $200 million, DOD, $100 million, DOE, $25 million, NASA, $20 million, and USDA, $25 million. For the years FY 1988 to FY 1996, the agencies would have been required to set aside approximately 10 percent of thei R&D obligations to universities and colleges for their laboratory modernization programs, which would form part of the R&D base of each agency.[86]

H.R. 2823 contained a provision to protect the base of university R&D funding. As structured, the provision prevented the university facility program from growing at a faster pace than the R&D base during years of increased R&D funding. In the event that R&D funding was decreased, the facility program formula would become zero if R&D funding was cut 10 percent or more.

An additional provision in the legislation would have established some protection against favoritism toward the big, well-established research universities over the smaller educational institutions. The legislation provided that at least 15 percent of the amounts that was reserved for the facility programs be available to educational institutions below the first 100 institutions in overall Federal R&D funding.[87]

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86 Ibid., p. 34.

87 Ibid.

The NSF would have served as a coordinator by conducting periodic assessments (every two years) of university and college research facility needs and by assessing and reporting the progress in the implementation of the laboratory modernization programs.

The House Science, Research and Technology Subcommittee held a series of hearings in October 1985 on H.R. 2823, but the legislation was not acted on. Testimony was given by individuals in both the public and private sector on the conditions of academic research facilities and the various funding mechanisms proposed for modernizing them. A summary of those hearings follows.

Overview of the Hearings on the University Research Facilities Revitalization Act of 1985, H.R. 2823

The House Science, Research, and Technology Subcommittee of the House Committee on Science and Technology held three days of hearings in October 1985 on the University Research Facilities Revitalization Act of 1985. Subcommittee Chairman Doug Walgren indicated that the objective of the hearings was to reach a consensus on a Federal program to address the problem of obsolescent and deteriorating facilities.

Opening testimony was provided by Erich Bloch, Director, National Science Foundation. Mr. Bloch acknowledged that modernizing university research facilities was of major importance to the scientific, engineering and technological health of the Nation, but declined to support the bill as it was written. Mr. Bloch argued that the bill, by allocating a fixed proportion of all R&D funds to facilities, would subtract from those funds otherwise available for basic research. Donald Carter, Acting Deputy Undersecretary of

Defense for Research and Advanced Technology, Department of Defense, offered similar reasons for opposing H.R. 2823. He contended that the establishment of a reserve fund for facility construction and renovation would divert resources from both the support of the education of the scientists and engineers and from the total research being performed at different institutions.

Additional witnesses, representing several educational organizations, the American Association of State Colleges and Universities and the American Society of Engineering Education, concurred with the intent of the proposed legislation. These panel members supported the facilities program outlined in H.R. 2823 and maintained that the bill did not divert support away from basic research. However, they did voice concerns about the funding formula contained in the legislation which they felt would restrict agency flexibility to administer programs overlap with existing construction authorities and discriminate against independent research organizations.

Reservations about the requirement for matching funds were expressed by Charles A. Hosler, Jr., Vice President for Research and Graduate Studies, Pennsylvania State University and Member, National Science Board. Due to the present fiscal budget constraints, he suggested reducing the net cost to the Federal Government to as little as 30 percent.[88] He maintained that a 30 percent grant up front from the Federal Government would be adequate to leverage matching sources from private and industrial sectors and from States. During his testimony, Dr. Hosler addressed the issue of indirect costs relative

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88 Ibid., p. 212.

to the support of facilities modernization.[89] He argued that indirect cost reimbursements are in most cases not replacement costs, but are based on the initial cost of equipment and buildings. Hosler cited as an example a building on his campus (Pennsylvania State University), which was erected in 1923 at a cost of $25 million, and has continued to be in active use and is undergoing a $6 million renovation.[90] However, this building is still being assessed, presumably, at a cost of $25 million.[91] He stated: "The fact that you have a lot of very old buildings that have been put to a very long and good use sometimes legislates [sic] against you if you want to recover your costs through the indirect cost mechanism."[92]

Additional comments were made relative to the set-aside provisions of H.R. 2823, indicating that facilities funding should be linked directly with research project awards. John Sherman, Vice President, Association of American Medical Colleges, stated that each agency's university R&D constituents have different construction needs

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[89] Indirect costs are those incurred for providing the management, services, and operation and maintenance of facilities required to provide the environment in which research projects are undertaken at academic institutions. One of the seven indirect cost categories is interest payments on borrowed capital to provide research facilities and equipment (for such items acquired after July 1, 1982). Thomas, Eleanor C., Leonard L. Lederman et al. National Science Foundation. Directorate for Scientific, Technological, and International Affairs. Aug. 3, 1984. p. 2. Discussion concerning indirect costs and application for facilities construction can be found further in this chapter.

[90] Ibid., p. 212.

[91] Ibid.

[92] Ibid.

which could be better accommodated through the annual appropriation process. He stated that:

> H.R. 2823's policy of requiring agencies to spend a minimum fixed percentage of their academic R&D budgets for research facility construction is generally undesirable, but it is doubly risky given the absence of comprehensive data on university facilities needs, broken down by discipline and type of institutions."[93] Sherman further recommended that:
>
> (1) The proposed funding formula for university (10 percent for each agency) facilities projects should be dropped and permanent legislative authority or regular authorizations employed instead;
>
> (2) The allocation of 15 percent of HHS'S research facilities program to institutions with smaller research and development budgets should be deleted;
>
> (3) Grant eligibility should be expanded to include "total project costs";
>
> (4) Program eligibility should be extended to university-affiliated hospitals;
>
> (5) Language should be added that allows construction funds to remain available until expended; and
>
> (6) Right-of-recovery language should be added to ensure funds are used for originally intended purposes.[94]

Vijaya L. Melnick, Senior Research Scholar, Center for Applied Research and Urban Policy, University of the District of Columbia; and Charles A. Walker, Dean, School of Pharmacy, Florida A&M University, endorsed the intent of the bill and proposed including support for new construction as well as a focus for historically black colleges and universities. Walker argued that these institutions have always found it difficult to develop their physical infrastructure. He stated that: ". . . for the past decade they [predominantly black institutions] have been provided significant research support from

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93 Ibid., p. 338.

94 Ibid., p. 342.

specific institutions and agencies in Washington, but they have never received support for facilities to conduct such research."[95] Walker contended that predominantly black institutions, though having demonstrated their research capabilities, have not participated in science and technology research on a large scale, and would need extra funding in order to get involved.[96] He recommended that 15 percent of the support be allocated for predominantly black institutions and that provisions be made similar to the set-aside of funds recently enacted in the Research Centers in Minority Institutions legislation for the development of research infrastructures at minority institutions.[97] Dr. Walker also stated that most of the predominantly black institutions would find the 50/50 matching requirement difficult to meet, preventing many from becoming involved.

H.R. 1905

On April 1, 1987, Representative Robert A. Roe, chairman of the House Science, Space, and Technology Committee introduced H.R. 1905. The proposed legislation would establish a program in the National Science Foundation for the repair, renovation or replacement of laboratories and other research facilities at universities and

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95 Ibid., p. 464.

96 Ibid.

97 The Research Centers in Minority Institutions (RCMI) program is designed to expand the national capability for research in the health sciences by assisting, through grant support, predominantly minority institutions that offer the doctorate in the health professions and/or health related sciences. The RCMI is intended to enhance significantly the capacity for the conduct of biomedical and/or behavioral research at such minority institutions by strengthening their research environment.

colleges. Provision within the legislation would authorize NSF to spend $250 million per-year for the next ten years, with the universities required to obtain matching funds from non-Federal sources.

The legislation also establishes criteria for the awarding of funds to any institution that include:

(1) the quality of the research and training to be carried out in the facility or facilities involved;

(2) the congruence of the institution's research activities with the future research mission of the National Science Foundation; and

(3) the contribution which the project will make toward meeting university research and related training needs.

The legislation also proposes that 15 percent of the total amount appropriated be available only to universities and colleges that receive less than $10 million in total Federal R&D in each of the two preceding fiscal years.

SELECTED AGENCY POLICY ALTERNATIVES

Policy Change by the NSF in Support of Research Facilities

After the NSF Authorization Act of 1986, The National Science Board of the NSF issued an "Important Notice" (no. 98) to universities and research organizations amending and clarifying its policy on supporting facilities construction and renovations. The National Science Board maintains that institutions should be able to recover the cost of facilities through indirect cost mechanism based on a reasonable expected life of the facility and realistic rates of recovery. The Board also announced that it would consider facility proposals along with research and instrumentation needs in its funding

decisions. Erich Bloch, Director, National Science Foundation stated that:

> It is the Foundation's policy that principal responsibility for providing facilities for research and education remains with academic institutions. The Foundation will, however, consider limited support for facilities when a compelling case can be made.[98]

According to the NSF, however, current fiscal budget constraints will prevent the foundation from making available special funding for facilities. As a result, those proposals submitted that include funds for facilities construction, renovation, or improvement will be considered along with all other proposals received by the NSF. Mr. Bloch stated that in most cases, NSF would establish a policy to give first consideration to project support, next to major equipment and instrumentation, and finally to facilities. However, he noted that exceptions could be made. " . . . [I]n fields in which research is especially dependent on specialized facilities, and a compelling argument is made that facilities are required to achieve specific research or education objectives, facilities support will be provided."[99]

Proposed Revision of Office of Management and Budget (OMB) Circular A-1, "Cost Principles for Educational Institutions"

There has been extensive debate by Congress, the research community and colleges and universities concerning the problem of rising indirect (overhead) costs of Government-funded academic

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98 National Science Foundation. Important Notice to Presidents of Universities and Colleges and Heads of Other National Science Foundation Grantee Organizations. Notice No. 98. Sept. 27, 1985.

99 Ibid.

research projects. Estimates for indirect cost payments in FY 1978 were approximately $900 million, an amount equal to 36 percent of the funds for the direct cost of research and development to colleges and universities.[100] The significant growth in indirect costs was witnessed in FY 1984 when estimated payments for indirect costs to institutions rose to approximately $1.7 billion, 43.6 percent of the estimated $3.9 billion for direct scientific research and development.[101] (See table 5.1.) The most salient increase in indirect costs was for payments for departmental administration, rising from $275 million in FY 1978 to $558 million in FY 1984.[102]

The Office of Management and Budget's (OMB) Circular A-21 sets Government wide accounting principles for direct and indirect costs of Federal grants to colleges and universities. While there has been almost no controversy over the reasonableness and necessity of direct costs, there has been considerable controversy over indirect cost reimbursements. The OMB lists seven categories of indirect costs: (1) operation and maintenance expenses; (2) use charges for buildings and equipment; (3) library expenses; (4) sponsored projects administration; (5) general administration; (6) student administration and services; and (7) departmental administration. In summary, indirect

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100 According to HHS, the direct cost of R&D is the total amount of Federal obligations to universities for R&D minus the total indirect cost payments to universities (e.g., Total R&D FY 1984 = 5.6 billion - $1.7 billion = $3.9 billion as the direct cost of research).

101 U.S. Dept. of Health and Human Services. Office of the Inspector General. The Impact of Indirect Costs on Research Sponsored by the Federal Government at Universities and Colleges. Memorandum ACN01-61004. Dec. 23, 1985. p. 2.

102 Ibid., p. 8.

costs can be divided into infrastructure and administrative costs. The first three categories are rarely controversial, with the increases being accounted for in three ways: (1) inflation; (2) more

TABLE 5.1. Approximate Amount Paid to Universities for Indirect Cost Components by All Federal Agencies (In Millions of Dollars)

Cost Components	1982	1983	1984	---3 Year--- Totals	Ratio
Use Allowances/Depreciation on Buildings and Equipment	$123	$138	$163	$ 424	9%
Operation and Maintenance of Physical Plant	351	412	482	1245	28%
General Administration	216	228	264	709	16%
Departmental Administration (Including Deans' Offices)	415	489	558	1462	33%
Sponsored Projects Administration	97	103	112	312	7%
Library	62	64	72	198	4%
Student Services	18	6	4	28	1%
Other	29	39	51	119	3%
Totals	$1,310	$1,480	$1,706	$4,496	100%

Source: U.S. Congress. House. Committee on Science and Technology. The Federal Government and the University Research Infrastructure. Hearings, 99th Cong., 1st Sess., May 21, 22: Sept. 5, 1985. Written testimony of Henry C. Kirschemann, Jr.

universities claiming facilities depreciation rather than the straight 2 percent use allowance, and (3) universities reexamining their accounting procedures and more accurately allocating building and equipment use and fuel costs to the cost of conducting research.[103]

[103] Ibid., p. 2.

It is the four departmental administrative costs components that are the least definitive and have been controversial and difficult to evaluate in terms of their benefit to federally sponsored research projects. In addition, these administrative cost pools have been difficult to quantify and challenge under the current provisions because of a lack of criteria for specifying the types of allowable costs. The variability is evident in that total departmental administrative rates, as a percentage of total direct costs, have ranged anywhere from 9.0 percent to 24.8 percent.[104]

As a result of the controversy surrounding indirect costs, numerous proposals have been made to restructure the way in which indirect costs are computed and reimbursement policies put into practice. Included in the proposals is one to allow the indirect cost mechanism to address the specific concerns of physical research infrastructure needs.[105] Such a proposal would entail increasing the allowable Federal reimbursements of indirect cost rates, making additional revenue available for upgrading the physical research facilities of colleges and universities.

HOUSE SCIENCE AND TECHNOLOGY TASK FORCE HEARINGS ON THE UNIVERSITY RESEARCH INFRASTRUCTURE

The House Committee on Science and Technology, Task Force on Science Policy, held hearings on May 21, 22 and September 5, 1985, on the physical condition of research infrastructure in U.S. colleges and

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104 Ibid.

105 Thomas, Eleanor C., Leonard L. Lederman et al. National Science Foundation. Directorate for Scientific, Technological, and International Affairs. Indirect Costs of Federally Funded Academic Research. Aug. 1984. p. 16 (unpublished paper).

universities. In testimony before the committee, Bernadine Healy, Chairman, Research Institute, Cleveland Clinic Foundation and former Deputy Director, Office of Science and Technology Policy, stated that the physical infrastructure of the universities directly affects the productivity of the research enterprise, the quality of talent of the college graduate and the overall ability of the universities to respond to an increasing technological society. She contended that, for more than a decade, the partnerships among industry, Government and the university have not addressed the issue of infrastructure. Because of the deficiencies in the physical infrastructure of the institutions, questions have been raised as to whether the colleges and universities will be able to train the very best talent consistently and continuously in order to ensure adequate future levels of scientific productivity.[106]

Use allowance as an indirect cost component received considerable debate.[107] Dr. Healy suggested making the cost recovery basis significantly shorter for depreciation for buildings and also for instruments. The present use allowance is two percent for buildings which assumes a 50-year life and a six and two thirds percent for equipment which assumes a 16 or 17 year life.[108] She maintained that

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106 The Federal Government and the University Research Infrastructure, p. 4.

107 Use allowance or depreciation is compensation for the use of an institution's buildings and equipment, provided they are needed and used for institutional activities and are properly allocable to sponsored agreements. The Impact of Indirect Costs on Research Sponsored by the Federal Government a Universities and Colleges. p. 4. (Memorandum ACN01-61004. Dec. 23, 1985. HHS Office of the Inspector General)

108 The Federal Government and the University Research Structure, p. 53.

the actual average useful life for buildings is probably about 20-25 years, the same as used for industrial laboratories.[109] The amortization period for equipment is also unrealistically long, she said, and should be six to eight years.[110] She proposed that a framework be constructed in which institutions are reimbursed realistically for facilities and equipment used in federally sponsored research. She also said that colleges and universities should assume leadership in identifying cost savings associated with research overhead.[111]

In discussion on the use allowance, Representative George Brown noted that the efficient rebuilding of the physical infrastructure required long-range planning and proposed changes in the use allowance to help address the longer term capital needs of academia. He suggested increasing the use allowance to 15 or 20 percent, thus permitting institutions to use the increased use allowance to make mortgage payments on new facilities and equipment.

During the hearings, Henry G. Kirschenmann, Jr., Deputy Assistant Secretary, Procurement, Assistance and Logistics, Department of Health and Human Services responded to questions on the amounts of indirect costs paid to institutions as part of the total costs of research grants and contracts, as well as the extent to which these payments support the research infrastructure of the institutions. Concern was expressed as to the disproportionate growth in indirect costs in comparison with direct costs to colleges and universities.

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109 Ibid., p. 5.

110 Ibid.

111 Ibid.

Data indicate that total Federal obligations to colleges and universities increased from $1.9 billion in FY 1972 to more than $5 billion in FY 1983, approximately a 160 percent increase.[112] During that same period, total estimated indirect cost payments to colleges and universities increased 275 percent, from $400 million to $1.5 billion.[113] Table 5.1 gives a more recent comparison of indirect cost components negotiated by the Department of Health and Human Services. The figures indicate that for FY 1982, FY 1983, and FY 1984, the administrative costs alone totalled 55.8 percent of the indirect cost rate. While this growth of indirect costs also reflects an increase in Federal contribution to physical facilities, only 37 percent of those costs go to all forms of suppport for facilities (table 5.1--9 percent for fixed costs, and 28 percent for operations and maintenance). The issue of Federal involvement in infrastructure needs, however, was not discussed by Mr. Kirschenmann.

An industry perspective regarding the research infrastructure at colleges and universities was offered by Frank B. Sprow, Vice President, Exxon Research Engineering Co., Annandale, N.J. Sprow was in agreement that a new Federal approach is needed for funding university research facilities requirements on a continuous basis. Sprow also encouraged the adoption of supplemental institutional grants to universities for establishing centralized research facilities. These centralized research facilities would be collaboratively managed by the institutions using them and would facilitate the acquisition, maintenance, and sharing of instrumentation. Sprow did note, however,

112 Ibid., p. 24.

113 Ibid.

that some collaborations presently exist between industry and universities. Sprow stated that:

> At some cost threshold, it is clear that centralized research facilities are necessary, because the infrastructure required to support research is simply too expensive to continue to exist under the purview of the individual researcher, a single department, a single university, or a single company.[114]

CONCLUSIONS

Though estimates vary as to the cost of renovating and modernizing university research infrastructure, the scientific research community is in agreement that deficiencies clearly exist, threatening the vitality of the Nation's academic scientific enterprise. As university research activities grow in scope, there is evidence that the deficiencies in the present infrastructure of the university system may become more pronounced. Some contend that the Federal Government should increase its commitment to university research infrastructure, while others feel that private industry and the States should be more directly involved. Legislation was proposed during the 99th Congress in an effort to alleviate the problems of the research infrastructure. Program and policy alternatives were also given by members of the scientific research community for the purpose of improving the present conditions of the university system.

Many in the academic community support the intent of both Mr. Fuqua's and Mr. Roe's proposed legislation because the bills recognize the long term nature of the facilities problem; provide upfront capital many universities do not have access to; require matching funds from non-Federal sources; set aside funds for universities with

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114 Ibid., p. 186.

smaller R&D programs; and require peer review for all institutions proposing facilities projects. While not all agree that a greater Federal role is needed, there is general agreement among interested observers, including the administration, that a growing problem exists.

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CHAPTER VI. REVIEW OF RECENT SURVEYS OF ACADEMIC RESEARCH FACILITIES NEEDS

INTRODUCTION

Besides the efforts of the Federal Government, various higher education organizations and associations, as well as individual analysts have issued major reports and held numerous meetings regarding the current state of university research facilities. This chapter reviews a number of different surveys aimed at evaluating the overall condition of university research facilities. The focus of this chapter is on surveys conducted since 1980, by different educational organizations, as well as the Federal Government.

RECENT SURVEYS ON UNIVERSITY RESEARCH FACILITIES ACTIVITIES

Despite the deepening concerns of the Nation's academic community about the state of university research facilities, Congress has been reluctant to act, in part, because of a lack of quantitative data detailing the extent and areas of need for upgrading and renovating such facilities. In an attempt to obtain a better information base on current university research facilities construction and renovation activities, Congress requested the National Science Foundation (NSF) to conduct an assessment of academic research facilities needs. Congress directed NSF:

> . . . to design, establish, and maintain a data collection and analysis capability in the Foundation for the purpose of identifying and assessing the research facilities needs of universities . . . . The Foundation, in conjunction with other appropriate Federal agencies, shall conduct the necessary survey every 2 years and report the results to Congress.[115]

Because of time constraints, the first report, which was due to Congress in ss than a year, focused on doctorate-granting universities only. NSF surveyed 165 doctoral granting institutions (108 public and 57 private) and conducted over 400 interviews with 80 research administrators and 175 deans representing 318 programs in eight scientific fields and engineering. The scientific fields included: medical, life, computer, social, mathematical, physical, environmental, and psychological.

The universities that participated in the survey accounted for 83 percent of all Federally funded research and development (R&D) expenditures at universities and medical schools in 1984. The public universities conducted 53 percent of the total with the private s ools accounting for the remaining 30 percent.[116]

To help Congress evaluate facility needs, the report provides information on the amount of space devoted to research at doctorate-granting institutions, expenditures on facilities related activities in progress and planned, as well as the age of the facilities. The report also summarizes research administrators' and deans' perceptions of facilities' needs based on 400 interviews.[117]

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115 National Science Foundation Authorization Act for Fiscal Year 1986. P.L. 99-159, Section 103.

116 Ibid., p. 2.

117 Science and Engineering Research Facilities At Doctorate-Granting Institutions. National Science Foundation, Sept. 1986. p. 1. (Hereafter referred to as the NSF Doctoral Granting Survey.)

Besides the recent NSF survey, there have been several other limited studies that have tried to evaluate academic facilities needs. In 1981, the Association of American Universities (AAU) conducted a mail survey of 15 universities (7 private and 8 public) to try and answer the following questions.

1. How much have the Nation's leading universities spent, from all sources, over the last four years (through 1981) to construct and refurbish research facilities, including major research equipment?

2. What do universities estimate their facilities and major equipment needs will be over the next three years to permit current faculty to continue quality research and education programs?

3. In the judgment of department heads and faculty, what will be the consequences for science, industry, and government if the accumulated facilities and equipment needs of the Nation's leading universities are not addressed?[118]

According to AAU, the 15 universities in their study, accounted for 22 percent of total Federal R&D spending in FY 1979.[119]

Two other university research facility studies were released in 1984 by the National Science Foundation. The first, conducted by an Ad Hoc Interagency Steering Committee on Academic Research Facilities and coordinated by NSF, examined past and future facility needs of 25 universities.[120] The second study surveyed 248 of NSF's principal investigators (PIs) and university research administrators from five

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118 The Natioo's Deteriorating University Research Facilities. Association of American Universities, July 1981. p. 2. (Hereafter referred to as, The AAU Study.)

119 Ibid., p. 2.

120 Adequacy of Academic Research Facilities. A brief report of A Survey of Recent Expenditures and Projected Needs in Twenty-Five Academic Institutions. Ad Hoc Interagency Steering Committee on Academic Research Facilities. NSF Task Group on Academic Research Facilities, Apr. 1984. (Hereafter referred to as the Interagency Survey.)

NSF divisions: Physics, Chemistry, Earth Science, Electrical, Computer, and Systems Engineering, and Physiological, Cellular, and Molecular Biology. The PIs and research administrators were questioned regarding their perceptions of both instrumentation and facility needs.

One of the weaknesses of NSF's PI survey is that it does not indicate the number and type of universities (public or private) surveyed. However, it does indicate that 21 percent of the PIs were from the top 24 schools which had received the largest amount of Federal R&D funding. While 75 percent of the PIs were from the top 100 universities receiving Federal R&D funding, with only 25 percent from universities that fell below the top 100 largest recipients.[121]

Finally it is important to note that both the AAU study and NSF's PI survey present data on both instrumentation and facilities as a single cost. As was indicated earlier in the report, because many universities had difficulty in separating out large instrumentation and facility costs (the AAU study includes only instrumentation that costs over $100,000) they often report them as a single physical plant expenditure. This is why NSF's doctoral granting survey is so important, because it focuses on university research facilities only.

Survey Findings

The following sections of the chapter review the major findings of the different university research facilities surveys that were

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121 University Research Facilities: Report on a Survey Among National Science Foundation Grantees. National Science Foundation, June 1, 1984. p. 3. (Hereafter referred to as NSF's PI Survey.)

reviewed for this report. A list of the surveys that were reviewed can be found in appendix A.

Federal Funding for Research Facilities Construction

Although the different surveys do not focus exclusively on university research facilities, they all come to the same conclusion regarding direct Federal support for the university infrastructure. Beginning in the late 1960s and early 1970s the share of Federal funding for facilities construction decreased dramatically and will likely continue to do so in the future. Federal funding for facilities accounted for 25 to 30 percent of the total between 1965 and 1970, and has dropped to a current level below 10 percent. According to NSF, this trend is expected to continue in the next five years, with Federal support accounting for only 6 percent of the total in 1991.[122]

These findings were reinforced by a recent Government Accounting Office (GAO) report that examined current Federal funding mechanisms for university research. According to the 10 public and 8 private institutions surveyed, their Federal share of physical plant support had decreased from 13 percent of the total in 1975 down to 4 percent in 1984.[123]

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122 NSF Doctoral Granting Survey, p. xiv.

123 Report to the chairman, Committee on Science and Technology, House of Representatives. University Finances Research Revenues and Expenditures, GAO, July 1986. p. 40. (Hereafter referred to as the GAO Study.)

Current and Future Institutional Spending Plans

A second major finding is that the majority of the universities surveyed are utilizing a number of different approaches to meet their current and future research facilities needs.

For example, NSF's doctoral granting survey showed that 62 percent of the universities surveyed were engaged in new construction, with 77 percent reporting upgrading or making major repairs on existing facilities.[124] (See figure 6.1) A majority of the research administrators and deans at the top 50 schools (54 percent see page 17 for definition), rated research facilities on their campus as good or excellent.[125] While the majority of those officials at schools below the top 50 (55 percent) reported the condition of their research facilities as fair or poor. (See figure 6-3.) The estimated completion cost of all facilities work in progress for the 1985-86 academic year was $1.7 billion.[126]

According to NSF's PI survey, 73 percent of the research facilities had experienced some renovation in the last ten years, at a median cost of $400,000.[127] While AAU's 1981 survey revealed that between 1977-1981, the 15 universities it surveyed had spent $400 million for new construction, modernization, major repair and

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124 According to NSF upgrading and renovation are costs associated with enhancing the R&D capability of a facility, complying with Government regulations, or gutting and rebuilding an existing facility. Major repairs includes costs associated with repairing deteriorated conditions, such as a new roof. NSF Doctoral Granting Survey. p. B-5.

125 According to NSF the "Top 50" are the top 50 universities ranked in terms of research and development expenditures in 1984.

126 Ibid., p. 7.

127 NSF PI Survey, p. 5.

renovation of their research facilities and special purpose research equipment.[128]

NSF's doctoral granting survey provides additional information about current facilities renovation activities. The survey noted that a much larger percentage of public schools (72 percent compared to 44 percent) than private schools, were engaged in new construction activities. Further, as figure 6.2 indicates, private universities were more likely than public schools to be upgrading and renovating research facilities, but the latter were spending slightly more.[129]

The top 50 schools were spending more than twice as much for both upgrading and renovation and major repairs, compared to those universities below the top 50. For example, in the area of upgrading and renovation, the top 50 averaged $5.3 million compared to $1.[illegible] million for the remaining schools, and for major repairs $1.6 million compared to $700,000 for those institutions below the top 50.[130]

Regarding future activities, over 80 percent of the universities are planning to construct new research facilities, according to NSF's doctoral granting survey. The completion cost over this five-year period is expected to be $5.8 billion. Administrators contacted in NSF's PI survey estimated that 47 percent of their buildings were slated for renovation at a median cost of $425,000.[131] AAU's survey results indicated that the 15 universities responding will need to

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128 AAU study, p. 7.

129 NSF Doctoral Granting Survey, p. 12.

130 Ibid.

131 NSF PI Survey, p. 5.

spend approximately $460 million for new construction in the next three years.[132]

NSF's interagency survey of 25 universities estimated that about $495 million per year of construction, remodeling, and refurbishment of science, engineering, and medical research facilities is planned over the next five years. According to the NSF report if "these plans were scaled up in proportion to the share of Federally funded R&D, [received by these universities] all universities and colleges would require over the next five years about $1.3 billion per year for these purposes."[133] This estimate would result in a five-year total expenditure of $6.5 billion, close to the $5.8 billion that the NSF doctoral granting study indicated.

Further analysis of NSF's doctoral granting findings reveals that the top 50 schools plan to spend about three times as much as the other institutions for constructing new research facilities. Public universities were more likely than private universities to have new construction planned (figure 6.2) but the private schools planned to spend more.[134] (Private schools averaged $35 million, compared to $31 million for the public institutions.)

Approximately 84 percent of the universities planned to upgrade or renovate existing research and development facilities, with the top 50 schools estimating expenditures substantially higher than the others. In the next five years three-fourths of the universities plan major repairs, with the top 50 institutions projected to spend amounts

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132 AAU study, p. 9.

133 NSF Interagency study. Initial Report. Apr. 1984.

134 NSF Doctoral Granting Survey, p. 13.

two and one-half times greater than the other universities, $9 million compared to $3.4 million.[135]

Factors Affecting Facilities Construction Activities

The NSF's doctoral granting survey found was that a majority of research administrators and deans did not believe the: "inability to obtain loans, restriction on the use of endowments and grants, legal restrictions, lack of campus space, and pressure to develop teaching rather than research capabilities, constrained their university from addressing its facility needs."[136] However, 48 percent of the research administrators said restrictions on grants and endowments were a problem while 38 percent said lack of space hurt their ability to address facility needs. A greater proportion of the deans felt the lack of campus space hindered their efforts to address facilities needs.[137] Only 14 percent of the research administrators felt that their inability to obtain loans hurt their ability to address their research facility requirements.

Facilities Funding Is a Marginal Expense

One of the most interesting findings that emerged from the NSF doctoral granting survey was that both the research administrators and deans viewed facilities funding as a "marginal expense" relative to

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135 Ibid., p. 14.

136 Ibid., p. 25.

137 Ibid., p. 28.

personnel and equipment.[138] Fifty-six perce . of the research administrators said new additional funds would be spent on facilities first. However, the administrators indicated that facilities expenditures would be cut first if funding were reduced, followed by equipment and then personnel. The deans were less likely to use additional research funds for facilities, although they were somewhat less likely to make reductions here first.[139]

NSF's PI survey asked both administrators and PIs to rank six items in relation to the importance they should receive in the spending of university funds, with the primary goal of improving research. Four of the six items referred to human resource needs. The PIs and research administrators chose instrumentation as the most important research need. Research facilities was considered the second highest need, followed by personnel needs.[140]

Sources of Funding for Facilities Construction

Funding for university research activities are derived from four major sources, the Federal Government, State governments, tax-exempt bonds, and private donations or endowments. As might be expected, all the surveys indicated that public and private institutions rely on very different sources of funding for facilities activities. According to the NSF doctoral granting survey, the public institutions depend on State resources for most of their facility funding. The private institutions depend on a broader mix of funding sources

138 Ibid., p. 1.

139 Ibid., p.

140 NSF PI Survey, p. 4

including the Federal Government. (See figure 6.4.) For example, for construction now in progress, public universities receive 53 percent of their funds from the State and 35 percent from tax-exempt bonds. Concomitantly, the Federal Government and private donations account for 35 percent and 29 percent respectively of private university research facility construction.[141] These funding patterns also hold for upgrading and major repairs with one exception. Private universities obtained 29 percent of their funds for upgrading existing facilities through tax-exempt bonds.

GAC's University Finances study also showed that universities receive funding for research facilities from a variety of sources. In 1984, the 10 public and 8 private universities in GAO's survey received 55 percent of their funds for facilities from institutional sources (money from the university's general fund, unrestricted money usually given to the university by other sources) 29 percent from State sources, 12 percent from private gifts and 4 percent (down from 13 percent in 1974) from the Federal Government.[142] The GAO study also revealed that public universities received 45 percent of their funds in 1975 and 1984 from State sources, while private universities received nothing from these sources.[143]

For future work (1986-1991) all of the universities in NSF's doctoral granting survey expect less direct Federal money for new construction. Private sources, and to a lesser extent, State Governments, are expected to compensate for the decrease in Federal

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141 NSF Doctoral Granting Survey, p. 15.

142 GAO Study, p. 40.

143 Ibid., p. 41.

support. Over 60 percent of the costs will be provided by State sources at public schools, with donations and endowments accounting for 40 percent of the funds at private universities. As figure 6-4 demonstrates, when compared to work in progress, private universities will generally rely more on tax-exempt bonds to finance planned work, with the public universities relying less on that source.[144]

These data do not include Federal tax expenditures (resulting from taxes foregone from charitable contributions and tax-exempt bonds) nor indirect costs on research grants. Congressional line-item appropriations for specific facilities may be included but that is not certain. Indirect costs, to date, have not gone for new construction (table 5.1), and line-item appropriations to date ($145 million) are less than four percent of new construction costs for work planned in 1986-91 (about $4.03 billion according to the NSF survey).

Availability of Current Research Space

Both research administrators and deans agreed that the lack of research space was a more serious problem than the general condition of research facilities. Three-quarters of the research administrators felt that research space was a more critical need than upgrading or repairing existing space. The deans interviewed said that research space affected their ability to get and keep high quality researchers and that the space problem greatly contributed to what a majority of them felt was their most pressing problem for the next five years, personnel. One-third of the interviewed deans, however, felt that inadequate facilities was the biggest problem they faced about

144 NSF Doctoral Granting Survey, p. 18.

research.[145] In addition, over 60 percent said they had less research space than they needed and a majority said additional space was a more critical problem than upgrading existing research space.

The major difference between research administrators and deans was in their overall rating of current research space. While the research administrators tended to rate university research facilities as good or fair, the deans tended to rate current facilities as poor.

Interestingly enough, the PIs in NSF's 1984 survey also mentioned the problem of space more frequently in their comments than any other potential problem. Over 38 percent of the PIs categorized current research facilities as crowded. This was true for all fields except engineering. Further, PI's working in new buildings were more likely to feel crowded than those working in buildings more than 10 years old (50 percent versus 38 percent).[146]

Age of Research Facilities

Earlier surveys including AAU's and NSF's PI survey seem to indicate that the condition of university research facilities roughly corresponded to their age. However, results of NSF's doctoral granting survey seem to indicate that age "was only a gross, and sometime misleading, measure of condition."[147] NSF reported that 43 percent of academic research facilities were constructed or renovated between 1970 and 1986.[148]

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145 Ibid., p. 25.

146 NSF's PI Survey, p. 11.

147 NSF Doctoral Granting Survey, p. 18.

148 Ibid.

Since the top 50 schools tend to be older than the other schools they, on average, had somewhat older facilities. According to officials of the top 50 schools, 65 percent of their facilities were built or renovated prior to 1970, with 29 percent of facilities work occurring in the 1960s. Only 54 percent of those schools below the top 50 reported new construction or renovation activities prior to 1970.[149]

Assessment of Academic Research Facilities by Field of Science

Results of NSF's doctoral granting survey indicate that academic officials believe that the most pressing need for facilities is in engineering, and medical, life and physical sciences. Current and planned construction is concentrated in these four areas. On a campus-wide basis, research administrators believe facility needs are greatest in biological, biomedical and physical sciences, engineering, and biotechnology.[150]

These findings are consistent with AAU's evaluation by field of science. In 1981 AAU estimated that for the next three years construction would be concentrated in the fields of engineering, medical sciences, biological sciences, and chemical sciences.[151] The results of NSF's doctoral granting survey reinforces AAU's construction projections, especially in the areas of engineering and medical sciences.

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149 Ibid., p. 19.

150 Ibid., p. 33.

151 AAU Study, p. 10c.

According to NSF's doctoral granting survey, deans representing physical and environmental sciences were more likely than others to consider facilities their greatest problem. This is probably due to the fact that in these two areas, along with social sciences, research facilities are relatively old compared to facilities in other research areas.[152]

The only area in which deans rated facilities good or excellent was in the medical sciences. Deans representing engineering and social sciences indicated that they had less research space than they needed. However, this may change soon because at least two-thirds of the 130 universities with engineering schools were currently building facilities in this area or planning to do so.[153]

In the areas of psychology and physical and life sciences, deans reported that current facilities limited the number of projects that could be done. However, deans from medical sciences and engineering departments reported most often that facilities needs limited the type of projects and diverted funds from other uses. The most pressing areas in engineering include materials, biochemical and biotechnical engineering, and microelectronics, and electrical engineering. Lack of campus space was a major problem with one dean remarking that:

> In analyzing the facilities needs, one should take into account that NSF and other agencies are now sponsoring large interdisciplinary research projects such as the engineering research centers. These kind of programs will require substantial additional space in the institutions where they are established. Furthermore, engineering education has changed dramatically in the last twenty-five years, from concentration on undergraduate teaching to a mix of undergraduate and graduate teaching and research. Many

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152 NSF's Doctoral Granting Survey, p. 33.

153 Ibid., p. 36.

institutions have serious facilities shortages and faculty problems as a result of these changes.[154]

However, as noted above, space limitations may soon improve in engineering since two-thirds of the 130 universities with engineering programs were currently building facilities or planning to do so.

In the field of physical sciences, 80 percent of the deans said they had less research space than they needed. The areas of greatest need are in physics and chemistry. One dean said he needed, "a place to house a telescope NSF gave us money for ten years ago."[155] Over 85 percent of the deans in physical sciences said facilities limited the number and type of research projects that can be carried out.[156]

According to the deans, conditions in environmental sciences were worse than any other area. The fields most often mentioned are geology, atmospheric science, and meteorology. Eighty percent of the deans said that conditions of facilities limited various activities that could be carried out.[157] Mathematical science were less of a problem than any other field, according to the deans. They indicated that attracting and keeping mathematicians are the most serious concerns. This is primarily due to a lack of adequate office space.[158]

More than any other area, facilities in computer science were more likely to be ranked excellent by their deans. In this area,

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154 Ibid., p. 37-38.

155 Ibid., p. 39.

156 Ibid.

157 Ibid., p. 41.

158 Ibid., p. 43.

deans ranked personnel issues, attracting faculty and graduate students, as their most serious problem in the next five years.[159]

Approximately half the deans surveyed indicated that life science facilities were in better condition than any other area except medical sciences. In general, medical science facilities tend to be relatively new. One-half of the newest facilities in the 111 universities with medical science programs have been constructed since 1979.[160]

Over 80 percent of the deans in life sciences said that facilities needs limited the number and type of experiments that could be conducted. Temperature control was the major facilities-related problem in this area. One dean commented that

> The biology building is not air conditioned . . . In the summertime, in a hot spell, the temperature will get up into the nineties, which is not good for either the people or the processing equipment. The fields with the most pressing needs are biochemistry, biophysics, microbiology and plant biology.[161]

Again, lack of campus space was the most frequently mentioned problem addressing medical sciences facilities needs. Forty-four percent of the deans said additional research money would be spent on facilities first. However, almost 70 percent of the deans reported that facilities funding would be cut first if research budgets declined. In medical sciences the areas of greatest need for research facilities are neurobiology, molecular biology, and molecular genetics.[162]

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159 Ibid., p. 45.

160 Ibid., p. 49.

161 Ibid., p. 47.

162 Ibid., p. 49.

Of all the fields of science, the deans representing psychology gave their facilities the overall lowest rating. About 24 percent of them characterized them as poor, another 26 percent rated them only as fair, with 37 percent and 3 percent rating them as good or excellent respectively.[163] Further, only 16 percent of the 148 institutions with psychology programs plan to build facilities in the 1985-86 academic year. Also, only 50 percent of the deans indicated that additional space is their most serious facilities need. Nevertheless, several deans mentioned crowding and dispersion of faculty as a problem. For example, one dean said "faculty morale and interest is low and the ability to recruit graduate students constrained because the work in psychology is split in different buildings that are inadequate to meet the needs of faculty."[164]

Finally, the social sciences contain the oldest research facilities, with half of the buildings constructed prior to 1940 and the other half built before 1972. As with psychology, the deans rated social science facilities lower than other science fields. Only 38 percent of the deans said facilities were better than fair, while 15 percent said they were poor. However, compared to deans in other areas deans representing social sciences gave facilities the lowest priority ranking for the next five years. More of the deans (44 percent) considered personnel issues, recruiting graduate students and faculty, more important.[165]

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163 Ibid., p. A-8.

164 Ibid., p. 51.

165 Ibid., p. 53.

UNIVERSITY REACTION TO NSF'S DOCTORAL GRANTING SURVEY

Although the university community supports congressional attempts to determine the current condition and level of need for research facilities, people speaking for the academic community, in general, are not happy with how NSF chose to interpret its survey findings.[166] Most university officials do not question the validity of the data collected, but rather believe that NSF tended to accentuate the positive aspects of the data, while underplaying the data's negative implications. They believe that this optimistic and perhaps inaccurate interpretation of some of the data may compromise efforts to secure new Federal funds in research facilities construction.

For example, NSF reported that 54 percent of research administrators from the top 50 schools rated their research facilities as good or excellent, while 45 percent of the remaining administrators placed their facilities in these categories.[167] University representatives point out that this means 46 percent and 55 percent of the research administrators from the top 50 institutions and those below the top 50 schools, rated their research facilities as fair or poor. They point out that this means that nearly half of the Nation's universities are conducting research in facilities that are rated fair to poor.

Interestingly enough, NSF data indicate that only 4 percent of the respondents rated their research facilities as excellent, while

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166 The information obtained in this section was primarily obtained, by the Congressional Research Service, through personal discussions with academic officials from different universities and higher educational associations, such as AAU.

167 Ibid., p. 29.

another 4 percent indicated they were in poor condition. Consequently, 89 percent of the research administrators said their facilities were in good (44 percent) or fair (45 percent) condition. (Four percent did not know the condition of their facilities.)[168]

Regarding the present condition of research facilities and their impact on conducting certain types of research, NSF reported,

> Most research administrators said that facilities needs constrained their research efforts. Nonetheless, research administrators at top 50 schools were less likely than those at schools ranked below the top 50 to say that facilities limited the types of research projects carried out and diverted funds from other uses to maintain facilities.[169]

University officials point out that in fact NSF's own data indicates that 88 percent of the research administrators from the top 50 schools said research facilities limit the number and type of projects they could support and that 75 percent had diverted funds from other uses to support their facilities.[170] Again, academic representatives contend NSF's wording tends to underplay the extent to which all the universities surveyed are forced to compromise the type and amounts of research the current condition of their facilities allow them to conduct.

University representatives contend that the current design of NSF's survey is incapable of accurately reflecting the extent of the overall need for research facilities at colleges and universities as requested by Congress. Recently, Linda S. Wilson, Vice President for Research, at the University of Michigan wrote that,

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168 Ibid., p. A-15.

169 Ibid., p. 30.

170 Ibid., p. A-19.

> past expenditure levels and current plans for the future are inadequate as measures of the need for future expenditures. Institutional plans are heavily guided by pragmatic assessments of the amount of capital funds expected from public and private sources. Recently, such plans have grossly underestimated actual need.[171]

Academic officials suggest NSF must first develop a definition of need, determine how to measure it and the extent to which universities have been successful in meeting their facility needs.

For example, to help determine how successful universities have been in meeting their needs, some university critics have suggested that NSF should ask questions about the number of research facilities approved for construction, that have been cancelled or delayed due to lack of funding. Further, they suggest that NSF should also try and determine the extent to which current or planned facilities activities had to be modified because of insufficient capital.

NSF did not ask any questions about plant debt. Many university finance experts are concerned that some universities may be increasing their plant debt due, in part, to borrowing for research facilities. Information on the growth of plant debt is important because it can help to determine how well certain universities are able to meet current and future research facility needs. A recent GAO study indicated that between 1975 and 1984 private university plant debt had increased 88 percent.[172] (Only 9 private universities were surveyed by GAO.)

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171 Wilson, Linda S. The Capital Facilities Dilemma. In The State of Graduate Education, E. Bruce, L. R. Smith. Brookings Institution, Washington, D.C. 1985. p. 134.

172 Briefing Report to the chairman, Committee on Science and Technology, House of Representative. University Finances Research Revenues and Expenditures. General Accounting Office, July 1986. p. 43.

Another concern of university financial officers is NSF's treatment of tax exempt bonds as a coequal source of funds with Federal and State funds, and private donations and endowments. In reality, they contend, tax exempt bonds are a source of cash or debt, that the university is obligated to pay off through a variety of sources, including building and equipment use from indirect cost allowances. The tax exemption, however, reduces the cost of borrowing and is a subsidy.

Those responding to the NSF survey objected to NSF's characterization of facilities expenditures as a "marginal expense." They argue that it should come as no surprise to the Foundation that universities would choose to cut facilities activities first and their research personnel last, if funding were reduced. The majority of universities would protect their research personnel first, since they represent the most important asset of any research program. NSF has responded that the term "margin expense" was used purely in an economic sense and it was not intended to imply that research facilities are not a serious university concern.

Some academic officials also believe that the NSF survey should have attempted to gather data on the consequences for universities that are funding large facilities projects. Often these projects result in universities deferring crucial maintenance on existing facilities, under-investing in undergraduate and graduate education, and reducing student aid. These are just some of the responsibilities of universities that have to compete with facilities funding.

Finally, in general, people speaking for the academic community believe that many of these problems could have been avoided if it had been more involved in helping NSF develop its original survey

instrument. Academics have asked NSF for more input into any revisions they make in the questionnaire, in preparation for the Foundation's 1988 research facilities report to Congress.

In response to these criticisms, NSF contends the report is not written to foreclose any options, that its staff did the best it could under the existing time constraints and that it could not substantiate all of the academic claims in support of Federal funding. NSF does not agree with all the criticisms, but has indicated that questions about plant debt will be included in the next survey. Further, NSF has already requested that the academic community help in revising its facility questionnaire for the 1988 congressional report.

CONCLUSION

In general, both the NSF doctoral granting and PI surveys do not seem to indicate a national crisis in university research facilities. However, all the surveys, including NSF's doctoral granting survey, show that in general, the Nation's universities are confronted with a research facilities problem that some regard as serious. The survey results suggest that, in the absence of an active direct Federal involvement in research facilities funding, the universities surveyed have embarked on a very aggressive mix of investment strategies in order to respond to their various research facilities needs. Further, the survey results indicate that a large percentage of both private and public universities have been involved in or are planning new research facilities construction activities in the next three to five years. Most direct Federal support goes to help facilities construction in private schools.

However, this does not necessarily mean that some type of Federal research facility program is not needed to help the Nation's universities meet their future research facility needs. For example, results of NSF's doctoral granting survey, suggest that in certain fields of science (e.g., physical and environmental sciences) more resources are needed to alleviate current facilities problems. If the States, which support most facilities construction at public colleges, for one reason or another, are not able to maintain their current level of research facilities funding, therefore, where would the needed capital resources come from? Further it is not clear how the new tax law will affect future sources of funds that the private universities rely on to finance planned research facilities activities. Consequently, Congress may wish to explore what options the Federal Government might have in helping universities improve their ability to meet current and future research facilities needs.

CHAPTER VII. FINANCING UNIVERSITY R&D FACILITIES

INTRODUCTION

There is much construction of new research facilities at the Nation's universities underway and planned, and a multi-source system of funding these new facilities has been created. Despite these accomplishments, several studies show a growing, unmet need to replace obsolete university research facilities since the late 1960s. Further, the different reports contend (see especially the report of the White House Science Council, Academic Research Facilities: Financing Strategies, and Crumbling Academe) that in more recent years this unmet need was accelerated by the high inflation of the late 1970s, rapidly changing requirements of research facilities, and, as chapter four indicated, a drop in Federal funding of university facilities construction. According to Erich Bloch, director of the National Science Foundation, "Federal outlays for R&D plant, as a percentage of total federal R&D, have declined from nearly seven percent in 1965 to less than one percent in 1983 and are still falling."[173]

The ability to finance the accumulated research facilities capital deficit is now of significant concern to many of the country's

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173 Peer Review and Special Interest Facilities Funding, A paper for the National Academy of Science Roundtable, Nov. 19, 1984. p. 7.

colleges and universities, especially when many of the top research universities are located in States that have experienced serious economic problems. Further, the universities have a number of other responsibilities, that require major financial resources including, improving undergraduate and graduate education, maintaining existing buildings, improving faculty and staff compensation, financing student aid and purchasing new research equipment.

Some contend the different estimates of the magnitude of the research facilities problem itself constraint action and inhibits the willingness of the Federal Government and others to respond. According to NSF, one-half of the university's physical plants (research laboratories, equipment, libraries and classrooms) are over 25 years old, and one-quarter were constructed before World War II.[174] Various analysts and reports estimate the total need for replacing and upgrading current university research facilities at anywhere from $30 to $40 billion.[175] A number of university officials have stated that during an era of fiscal stringency, it always has been far more expedient to defer capital expenditures on "brick and mortar until tomorrow."[176]

This chapter reviews a number of proposals that have been developed by different analysts, individuals in the academic community and various representatives of higher education associations to assist the universities in obtaining funds for financing the construction and renovation of university research facilities.

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174 An Action Agenda for American Competitiveness. Business-Higher Education Forum, Sept. 1986. p. 15. (Hereafter referred to as An Agenda for Action.)

175 Ibid., p. 16.

176 Ibid.

SUMMARY OF DIFFERENT FINANCING PROPOSALS

In July of 1985 over 200 university administrators, researchers, Government officials and representatives of scientific and professional societies met to examine and discuss different strategies universities might implement to finance their growing research facilities construction needs.[177] The goal of the financing conference was not to adopt a consensus recommendation. Rather, the conference participants were asked to develop a comprehensive set of recommendations aimed at meeting university research facilities funding needs on both a short- and long-term basis. The participants were also asked to keep in mind the diverse needs of both public and private universities. As a result the participants developed a set of major action items.

However, before discussing these items it is important to review some conclusions the conference participants reached regarding the funding of research facilities. First, the participants concluded, not surprisingly, that despite its small size, Federal Government support for research facilities is an essential part of the Government's basic research funding program and second, that there are two ways of approaching Federal funding for facilities. First there is payment up front by a Federal facilities grant or second, there is payment over time via indirect costs.[178]

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177 Academic Research Facilities: Financing Strategies. Report of a Conference July 22-23, 1985, National Science Board, National Academy Press, Washington, D.C. 1986. (Hereafter referred to as Financing Strategies Conference.)

178 Ibid., p. 32.

Further, these two approaches differ in three different ways. First, payment over time limits access to only those universities that can provide or secure the initial capital required to build the research facility, capital that will be reimbursed in part or in whole through indirect cost recovery. Facilities grants help to eliminate the problem of access to large amounts of capital.

Second, there is a difference in the type of peer review that occurs under these two approaches. Payment over time uses existing peer review methods, while separate facilities grants require a more aggregate evaluation and review of an institution's programs.[179] These types of peer review panels were in operation in the 1950s and 1960s, but are currently not active because there were no Federal research facilities grant programs in operation until 1987. Direct congressional appropriations for facilities is an upfront payment approach which so far has not been accompanied by peer review. Finally, the third dimension is who takes the risk. For payment over time the institution takes the risk. For facilities grants the Federal Government takes the risk in proportion to its share of the overall funding.[180] When reviewing the following ten recommendations, it is important to keep these differentiations in mind.

The following recommendations (1-10) were made by the academic community and can be found on pages 3 through 14, in the Academic Research Facilities: Financing Strategies, report. None of these recommendations originated from the Congressional Research Service.

1. The use allowance for facilities under OMB Circular A-21 should be increased from the present two percent to five percent.

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179 Ibid., p. 33.

180 Ibid.

As chapter five indicated one of the components of indirect costs (IC) chargeable to the Federal Government in R&D grants and contracts with universities is use allowance for research buildings. Currently, the standard allowance is 2 percent a year. Under the use allowance category, universities are permitted, with the approval of the Department of Health and Human Services or the Defense Department, to apply a specific documented depreciation rate for their buildings. Further, beginning in 1982, universities were also allowed to claim interest on certain loans used for the construction or renovation of research facilities.[181]

A number of different reports, including those by the White House Science Council and the Business-Higher Education Forum contend the real average useful life of a university research facility is approximately 20 years, rather than the current assumption of 50 years.[182] Participants at the financing strategy meeting felt that decreasing the use allowance to a 20 year period would: 1) link support for particular facilities with individual research projects that, in most cases, have passed the test of peer review; and 2) would allow for a faster rate of recovery of institutional funds used to maintain facilities and to repay loans used for construction or renovation.

Testifying before Congress, Henry G. Kirschenmann, Jr. Deputy Assistant Secretary for Procurement, Assistance and Logistics,

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181 Ibid., p. 3.

182 Report of the White House Science Council. Panel on the Health of U.S. Colleges and Universities, Feb. 1986. p. 15. (Hereafter referred to as the White House Council Report.) Also see Toward A Competitiveness Agenda. Highlights of the 1985 Winter Meeting of the Business-Higher Education Forum, Jan. 24-26, 1985. p. 24. (Hereafter referred to as the Competitiveness Agenda Report.)

Department of Health and Human Services, (HHS) pointed out that between 1982 and 1984 use allowance and depreciation on buildings and equipment accounted for only ten percent of total indirect costs paid to colleges and universities. (See chapter five for a further discussion of how the different indirect costs components are allocated to university research.) Mr. Kirschenmann testified that out of a total of $424 million paid for use allowance between 1982 and 1984, 43 percent, or $183 million, was for buildings and 57 percent, or $241 million was for research equipment.[183]

If use allowance were increased from 2 to 5 percent per year, HHS estimates an additional cost of approximately (keeping in mind university indirect costs keep moving upward) of $155 to $165 million per year for building use only.[184]

The General Accounting Office (GAO) in its 1986 study of University Finances, Research Revenues and Expenditure, examined indirect costs for building depreciation compared with capital expenditures. GAO surveyed 15 public and 9 private universities and found that "between 1980 and 1984, the annual university investment for construction in science and engineering was 9 to 12 times higher than the annual Federal indirect cost reimbursement for building depreciation, in current dollars."[185]

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183 Statement of Henry G. Kirschenmann Jr., before the Task Force on Science Policy Committee on Science and Technology. U.S. House of Representatives, May 21, 1985.

184 Information provided by an HHS official.

185 Briefing Report to the chairman, Committee on Science and Technology, House of Representative. University Finances Research Revenues and Expenditures. General Accounting Office, July 1986. p. 43. (Hereafter referred to as the GAO Research Revenue Study.)

The average cost for capital expenditures at each university GAO surveyed grew from $4 million to $7 million during this time period. This growth in spending was due entirely to the private universities, which began the period averaging $3 million and ended up at $12 million in 1984. In current dollars, annual Federal reimbursement for building use allowance at each university increased from $400,000 in 1980, to $600,000 in 1984. Again, the private universities accounted for the increase, jumping from an average of $600,000 to $1 million in 1984. The public universities averaged $300,000 per school in annual use allowance reimbursements.[186]

Participants at the financing strategy conference noted the primary disadvantage to increasing use allowance is that it fails to provide access to the initial capital often needed by universities to start construction on a new research facility. Others noted that increasing the cost of use allowance could reduce the availability of overall research support unless Federal funds for research were increased.

Finally, Robert Sproull, President Emeritus, University of Rochester, recommended to the participants that charges for rent of research space be made an explicit component of Federal R&D indirect cost component. (See appendix B for further details.) Sproull's basic approach is to assemble the costs that appropriately would be counted as part of rent of research space and deal separately with the "basket" as rent-per-square foot of space used on federally supported project. He claims that rent is easily understandable and readily comparable, and therefore less controversy could be anticipated in

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186 Ibid., p. 43.

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this part of the pooled costs.[187] According to Sproull, the elements of the rent calculation would include: 1) building depreciation and obsolescence; 2) routine maintenance; 3) security; 4) grounds care; 5) parking lot costs for space required by people associated with the building space; and 6) heat, power light, "pure waters" charges.[188]

The proposal recognizes that although rent would be part of indirect costs, some components of indirect costs would require changes. For example, "central administration" would probably stay the same, but "research grants and contracts administration," now 100 percent in the pool, would be put in at some lesser percentage, perhaps 85 or 90 percent.[189]

2. An independent nonprofit corporation should be established to finance academic research facilities.

The attendees of the facilities financing strategy conference pointed out that only 300 of the Nation's 3,000 institutions of higher education have effective access to the existing tax-exempt bond market. The remaining universities lack credibility with private lenders, who are not used to evaluating the risks of lending money to academic institutions. The participants contend that most of these universities are financially healthy but they need a mechanism to provide guarantees of their financial performance to private lenders.[190]

The GAO study of research revenues and expenditures, help to shed some light on this problem by examining the ratio of physical plant

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187 Financing Strategies Conference, p. 132.

188 Ibid.

189 Ibid.

190 Ibid., p. 4.

debt to current university fund expenditures. GAO found that in constant 1984 dollars, current fund expenditures grew much faster than plant debt between 1975 and 1984. During this time period, debt grew 13 percent, while current fund expenditures rose 35 percent.[191]

However, there were significant differences between the 15 public and 9 private institutions GAO surveyed. Physical debt for the 9 private universities increased 86 percent, while public university debt decreased by 16 percent. Further, private plant debt in proportion to overall private expenditures rose from 25 percent in 1975 to 34 percent in 1984. Concomitantly, public university plant debt declined from 32 percent of expenditures to 21 percent.[192]

One approach suggested to provide universities initial access to large amounts of capital was the creation of an independent, nonprofit corporation to provide low-rate loans, loan guarantees, and other financial assistance for research and educational facilities. (See appendix C for further details of this proposal.) It was suggested that the corporation should be established with a one-time Federal appropriation of $500 million, with funds added from private sources. The corporation would issue its own bonds, using the initial capital as backing, and use the capital obtained to make loans to colleges and universities for construction and renovation. Income from the capital could be used to offset administrative costs and to subsidize interest costs for the facilities loans.[193]

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191 GAO Research Revenue Study, p. 47.

192 Ibid.

193 Ibid., p. 5.

It was also suggested that the corporation could establish a merit-review system with respect to access to loan funds. Having made the loans it then would sell the securities in the secondary markets, very much like the Federal National Mortgage Association or the Student Loan Marketing Association. Consequently, it would improve the risk ch..racteristic of the debt, while increasing access to private capital and making the whole process more efficient.[194]

The conference participants reported that the provision of funds prior to construction or renovation was a major advantage for the university. By issuing its own bonds and lending the proceeds to qualifying institutions, the corporation would diversify risk, while hopefully providing lower interest rates to borrowers. Most importantly, the corporation would provide access to tax-free bonds to many institutions that would otherwise not have such access. Finally, it was pointed out that the peer review process for such facilities should involve a review of the universities' business plans, as well as a review of scientific merits.[195]

A similar idea was embodied in legislation that was recently passed by Congress when it reauthorized Title VII of the Higher Education Act of 1965, and established a Facility Loan Guarantee Corporation. (See chapter 5 for further details P.L. 99-498.) Among other provisions contained in Title VII, is the establishment of the College Construction Loan Insurance Association (CCLIA). It will be organized through the Department of Education and Treasury and the Student Loan Marketing Association (SLMA). The CCLIA will issue stock

194 Ibid., p. 36.

195 Ibid., p. 5.

and use the proceeds to guarantee and insure bonds, loans, leases, and other debt instruments for any "educational facilities purpose."[196] These funds would be available primarily to "non-investment grade"[197] universities for such facilities activities as construction, renovation or the purchase of research equipment. The Association will be funded at $50 million in FY 1987.

The university community essentially endorses this new Association. Most research administrators have pointed out that the SLMA has done a good job in support of student aid. Since it was established in 1972, it has attracted private capital in excess of $650 million, and supports some $14 billion in loans to college students.[198] Consequently, the SLMA has gained considerable credibility in the commercial market place.

3. The concept embodied in H.R. 2823, a bill to authorize increased Federal support for construction and renovation of academia research facilities, should be supported. Funds should not be provided on a set-aside basis, however, but should supplement existing research funds.

Members of the Business-Higher Education Forum stated that a lack of a clear legislative authority to address the research facilities problem has prevented many Federal R&D agencies from initiating any large-scale facilities construction or renovation program. Further, the Forum pointed out that many agencies now lack administrative mechanisms necessary to carry out such a program.[199] As discussed in chapter five, H.R. 2823 would authorize the six major R&D agencies

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196 Ibid., p. 5-6.

197 Investment grade refers to academic institutions considered to be of the highest credit calibre.

198 Ibid., p. 6.

199 Financing Strategies Conference, p. 6.

that account for approximately 85 percent of Federal funds (NSF, DOD, DOE, HHS, USDA, and NASA) to establish programs for modernizing college and university laboratories.

The legislation would authorize funds of $470 million in FY 1987. In the succeeding years to 1996, the six agencies would be required to spend at least 10 percent of their academic R&D funding for further construction activities. Further the various Federal agencies would fund only half of the cost of the proposed construction activity, with the remaining funds coming from institutional or other non-Federal sources.

Those attending the financing strategies meeting generally supported the intent of the legislation and felt that it would be an effective means of leveraging additional funds from the States, industry, and academic institutions.[200] Many of the participants said that the matching requirement was a strong feature, but wanted to be sure that the institutions would have flexibility in the ways such a requirement could be fulfilled.[201]

The major concern, raised at the meeting, regarding the proposed legislation, was the 10 percent set-aside. As might be expected the fear associated with this provision is that there would be 10 percent reduction in funds that would have otherwise supported research.

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200 Leveraging usually refers to the practice of adding borrowed funds to funds on hand, in order to "leverage" the funds on hand by enabling the institutions to finance bigger projects. Leveraging is inherent, though not always apparent, in virtually every capital project financing in the tax-exempt market. When an institution uses agency financing for a project, it is in essence using the borrowing to leverage its own endowment and cash flow.

201 Financing Strategies Conference, p. 7.

However, some of the conference participants felt that such a trade-off may be necessary, given the current Federal deficit problems.

Different facility reports have suggested similar programs or endorsed slightly different versions of H.R. 2823. For example, the 1981 AAU study made two recommendations designed to fund university research facility needs. First, AAU recommended that NSF's facilities and equipment initiative of $100 million proposed for FY 1982 be restored. Because of budgetary constraints the Reagan administration withdrew this proposal, which would have provided $75 million for rehabilitation of research laboratories and $25 million for upgrading instructional equipment at schools of engineering.

The secord proposal was to establish in each of the mission agencies a facilities rehabilitation program targeted on the fields of science and engineering of primary significance to their mission.[202] The following agencies, DOD, HHS, DOE, NASA, and USDA, would support research facilities development in key areas of research for that particular agency. For example, DOD is a primary supporter of engineering and computer research at universities. Consequently, AAU proposes that DOD should then address the primary laboratory needs at universities that carry out such research for DOD. Finally AAU recommended that the Office of Science and Technology Policy (OSTP) and NSF coordinate such a program.[203]

In its Agenda for American Competitiveness report, the Business-Higher Education Forum presented two proposals for upgrading and maintaining university research facilities. First, it proposed a

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202 AAU Study, p. 22.

203 Ibid., p. 23.

long-term facilities-modernization program (10 years) to be funded by the six major Federal R&D agencies by allocating, perhaps 5 percent of their annual budgets for financing capital expenditures. Although this might result in fewer research funds, Robert H. Rosenzweig, president of AAU contended, "Most university presidents would accept sacrificing R&D money in order to improve the infrastructure."[204] The participants felt this approach would reestablish the connection between each agency's responsibility for funding both research and the facilities necessary to conduct state-of-the-art research. The participants recommended a decentralized approach rather than having one agency such as NSF coordinate the program.

Secondly, the Forum suggested making a capital budget for R&D equipment and facilities part of the Federal Government's overall R&D mission. As part of its annual analysis of capital investment in the public infrastructure, roads, bridges, and sewers, the review would include expenditures for higher education research infrastructure including: buildings, laboratories, scientific instruments, and libraries. The review would be updated annually and be published as part of Special Analysis D of the Budget of the United States Government.[205]

Finally, the Report of the White House Science Council endorsed H.R. 2823 with two significant modifications. First, it recommended that the facilities program suggested in H.R. 2823 should be located in NSF rather than spread across six major agencies, in order to minimize duplication of effort and for the purpose of establishing

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204 Competitiveness Agenda Report, p. 18.

205 Ibid., p. 19.

uniform standards and procedures.[206] Further, the report recommended that funding for the program should not be taken out of existing R&D budgets but must be provided incrementally to the present R&D budget. Such funds should be included in NSF's budget for the next ten years and awarded on a 50/50 matching basis with non-Federal funding, subject to peer review within the scientific or technical community involved.[207]

Other than hearings, held by the House Science, and Technology Committee, Congress has taken no action on H.R. 2823 and according to the chairman of a key House subcommittee there may be little future prospect for action. He stated:

> In spite of the massive influence (of the major research universities in my State) the people out there just don't like what you're all about. That may be brutal news to you. Again, we're out there every two years shaking hands and rubbing elbows and doing polling and asking people what they want . . . I think it's due in large part to the people in the public sector (who feed) the anti-intellectualism of the American people. But unless people out there can sense a tangible benefit . . . they think that all that money is going to pointy-headed people to create luxury laboratories for very little benefit for me, and that's a waste of my tax dollar. . . .[208]

If this statement is accurate, (and some Members of Congress and the university community do not think it is) a new general program of Federal facilities aid is unlikely and other means will be sought, among them direct congressional appropriations for specific facilities. Pressure may grow to directly request funds from Congress, to help with the construction of certain university research facilities. This issue--which involves the bypassing peer review--will be discussed in chapter 8 of this report.

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206 White House Science Panel, p. 14.

207 Ibid., p. 15.

208 An Agenda for Action, p. 21.

4. Proposals for tax reform should be monitored to evaluate their effects on facilities funding.

The recent tax reform bill passed by Congress and signed by the President has aroused some concern in the academic community. "The bill is the greatest catastrophe for higher education in 25 years," said Sheldon Steinbach, counsel for the American Council on Education, which represents 1,500 colleges and universities. As a matter of public policy it might seem like a good idea, but as a matter of social policy it's just terrible."[209] Essentially the new tax law contains three provisions that university officials believe, among other things, could seriously impair the Nation's universities' ability to raise money to repair and expand facilities.

The first provision places a cap on the use of tax-exempt bonds by private universities. Under the new law, an individual private university could issue no more than $150 million in tax-exempt bonds at any one time. According to AAU, 24 private universities, including Harvard, Yale, Stanford, and the University of Pennsylvania, already exceed the $150 million in outstanding bonds. Many university officials believe this aspect of the tax law discriminates against the private universities. Some analysts have pointed out that finding ways around the law may be difficult. Nevertheless, some affected schools may try to enter into agreements with institutions that have not reached their caps or work with state universities which are not affected by the cap.[210]

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209 Tax Bill Provisions Criticized as Harmful to Higher Education. Congressional Record, Sept. 10, 1986. p. S. 12279.

210 Webre, Philip. Tax Reform: Why All the Whining? The Scientist, Oct. 20, 1986. p. 13.

A participant at the facilities financing strategies conference indicated that if tax-exempt bonds were lost, the cost of capital to universities would increase two to three points. This would feed back through the indirect cost route as a interest cost to universities. Further, maturities for taxable debt are much shorter than those available in the municipal bond market. In fact maturities would come down from 30 years, which is what they are now for academic institutions, to perhaps 10 to 12 years. This will have a very significant effect on the institution's ability to finance research facilities over time.[211]

A recently released survey by NSF of 165 Doctoral Granting Universities revealed that during the 1985-86 academic year 13 percent of the funds used for new construction of research facilities at private universities came from tax-exempt bonds. However, when asked about future new construction (1986-1991), private universities said they plan to obtain 32 percent of their total funding through tax-exempt bonds.[212] Many university officials believe the new tax law provision could prevent a number of universities from implementing some of their building plans, while giving public institutions an unfair advantage.[213] Further, university representatives contend the cap does not reflect either an institution's need to borrow funds or the scope of an institution's educational activities advanced through tax-exempt bonds.

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211 Financing Strategies Conference, p. 36.

212 Science and Engineering Research Facilities At Doctorate-Granting Institutions. National Science Foundation, Sept. 1986. p. 17.

213 Congressional Record, Sept. 10, 1986. p. S. 12280.

A second major provision would make donors of large gifts of appreciated property subject to a minimum tax rate of 21 percent on the increase in value of the donation, making this type of donation less advantageous to the donor. Prior to the new law, the full market value of such gifts, usually real estate and stocks, could be deducted from the donor's gross income. Forty percent (by value) of the gifts to universities worth over $5,000 are gifts of appreciated property. In order to avoid this tax, some donors may chose to spread their gift over several years, which could cause universities some problems.[214] Recent economic studies on sensitivity of charitable giving to its price suggest that charitable giving decreases between 1.2 and 1.3 percen for every 1 percent increase in its price.[215] Private giving represents only one-tenth of university income, and is declining in overall importance.

Although university officials admit private giving may be declining, it is a very important source of funds for construction activities. For example NSF's Doctoral Granting Survey indicated that in academic year 1985-86, private sources of giving accounted for 29 percent of new construction funding. For new construction planned between 1986 and 1991 private giving is expected to account for almost 50 percent of all funds.[216]

Finally, the new tax law eliminates deductions for charitable contributions unless taxpayers itemize their returns. University officials believe that this will discourage recent graduates from

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214 Tax Reform: Why All the Whining?, p. 13.

215 Wilson, p. 141.

216 NSF Doctoral Granting Survey, p. 17.

making donations, thus making more difficult the early recruiting of important future sources of private giving. Again, such private sources of giving are an important resource for private university research facilities construction activities.

5. The tax credit now available for research equipment donations should be extended to similar donations for academic research facilities. Generally, thought should be given to new tax inducements for facilities supported by the private sector.

The Economic Recovery Tax Act (ERTA) of 1981 allows research equipment manufacturers that donate equipment to universities to take a tax deduction amounting to half the difference between production cost and the fair market value. The act excludes donation of educational equipment as distinguished from research equipment. Most participants at the financing strategies meeting agreed that donations should be extended to facilities because the distinction that is made between research equipment and facilities is strictly artificial.

Those at the meeting talked about establishing condominium laboratories jointly funded, with portions allocated to the university and the company it is working with. Such an approach would be a step beyond the "incubator" facilities now existing at a number of locations.[217]

There is a provision in the new tax law that allows a 20 percent tax credit for corporations which make donations or enter into agreements with universities and non-profit organizations. It is not clear if a company could claim a tax credit if part of an agreement with a university involved upgrading existing research facilities in order to carry out their joint research venture. The university

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217 Financing Strategies Conference, p. 40.

community believes that it will require assistance from the private sector in order to improve their current research facilities.

6. A careful study emphasizing the collection of better data on the state of academic research facilities should be undertaken.

As mentioned in the introduction there is a great deal of variance in the actual estimates regarding the magnitude of the university research facilities problem. The conferees felt these differences were due to definitional problems, sampling techniques, and time periods used. The 1981 AAU study recommended that the OSTP along with the six major Federal research agencies (NSF, DOD, DOE, HHS, NASA, and USDA) should assess the seriousness of the present and future academic research facilities inadequacies.[218]

The lack of accurate data on the current condition of research facilities led Congress to request the National Science Foundation to conduct an assessment of current academic research facilities needs. The survey (which was completed in October of 1986 was discussed in the last chapter) will be conducted every two years and will focus on such things as sources of funding for facilities construction, amount of construction in progress, amount planned in the next five years, and conditions of facilities by field of science.

7. State governments should develop comprehensive plans for academic research facilities on the basis of their views of the State's economic future, industrial profile, and labor force needs.

The participants of the financing strategies meeting recognized that State governments have played a key role in helping their univeraities improve their research infrastructure by forging partnerships with Federal, State and private concerns. Although the

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218 AAU Study, p. 22.

resulting investments are not confined to facilities, they do demonstrate the increasing degree to which State governments understand and are willing to deal with facility modernization issues. Finally, States now generally recognize the importance of their university research activities to the economic well being of the different States.[219]

8. In developing their plans, States should consider a wide range of sources and techniques for funding academic research facilities.

The conference participants recommended a number of funding approaches available to States to finance facilities construction. They include general funding, leveraging of private funds, bonding and other debt financing, lease-purchasing arrangements, dedication of tuition payments to facilities, user fees and rents, and methods of managing indirect costs recovery funds. Further earmarking taxes could provide a steady revenue source to continually construct, maintain, and renovate facilities.[220]

9. Institutions should improve their facility design, construction, and space management practices to reduce cost, to incorporate the best current practices, and to achieve better use of existing and potential facilities.

Those attending the conference recognized that universities need to do a better job of managing and allocating their existing research space. Because the organization of university research is so decentralized, it does not "lend itself to orderly business practices in institutional planning, budgeting, and facility development."[221]

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219 Financing Strategies Conference, p. 10.

220 Ibid., p. 12.

221 Ibid., p. 13.

In his book Crumbling Academe, Harvey Kaiser discusses the idea of a facilities audit, an approach universities may wish to consider. According to Kaiser the facilities audit is the starti.g point for selecting capital renewal and replacement priorities. It examines the conditions of buildings, grounds and utilities plus their functional appropriateness. The audit evaluates the physical condition and functional adequacy of campus facilities, produces a record of building's characteristics and use, existing condition, an overall facilities rating, and comments or maintenance requirements and repair and renovation needs. The audit is broken down into three phases: designing the audit, collecting the data, and presenting the findings which includes setting priorities for facilities replacement.[222] (See appendix D for further details.)

10. Institutions should reinvestigate their funding sources and alternatives to assure themselves that available opportunities have been tapped to the fullest.

Here the universities were advised, by the conference participants, to undertake a systematic and comprehensive examination of all their alternatives for research facility funding, with a view to expanding their "portfolio" of techniques, resources, and information sources.[223] Conference participants were also urged to look at an AAU report entitled Financing and Managing University Research Equipment, for further suggestions along these lines. Many of the AAU's following recommendations could be applied to facilities management as well. For example, it recommended that:

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222 Kaiser, Harvey H. Crumbling Academe, Solving the Capital Renewal and Replacement Dilemma. Association of Governing Boards of Universities and Colleges, 1984. p. 17-29.

223 Ibid., p. 14.

1. That universities more systematically plan their allocation of resources to favor research and equipment in areas that offer the best opportunities to achieve distinction;

2. That universities budget more realistically for the costs of operating and maintaining research equipment;

3. That universities consider establishing inventory systems that facilitate sharing; and

4. That universities act to minimize delays and other problems resulting from procurement procedures associated with the acquisition of research equipment.[224]

CONCLUSION

Clearly representatives from the academic community recognize that no single source or mechanism of funding will be adequate to meet current research facilities projected needs. As this chapter indicates different funding strategies, involving Federal, State, industry, and universities support and financing are now in use and new ones will continue to be required, if the Nation's universities are to successfully finance their current and future research facilities needs. Further, analysts examining the research facility funding issue have pointed out that the capital deficit problem is a chronic problem not susceptible to a quick fix. Rather, in their view, any approach that is adopted would best be spread across many years as the research facilities needs of the various scientific and engineering disciplines continue to change.

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224 Financing and Managing University Research Equipment. Association of American Universities, et al. Summary and Recommendations, Washington, D.C., 1985. p. 9.

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CHAPTER VIII. BYPASSING THE PEER REVIEW PROCESS

INTRODUCTION

In an attempt to build research facilities a growing number of educational institutions have obtained funding for research facilities by appealing directly to Congress and bypassing the peer review process. In FY 1982, such actions amounted to $3 million; however in FY 1987 congressionally earmarked funds for academic research facilities exceeded $145 million.[225]

Commonly referred to as academic "pork barrel," many in the academic community contend that these activities are symptomatic of the overall decline in Federal support for the building of university research facilities. According to some observers, the trend also may reflect the increased political sophistication and activity of states, cities, and academic institutions. While the Federal Government was reducing its direct support (see table 4.1) for facilities, science and engineering research was becoming more expensive and capital intensive. Another significant factor that may be contributing to this phenomena is that some members of Congress believe that universities in their district, in partnership with industry and

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[225] This figure includes $69.7 million for the Department of Energy, $19.9 for the Department of Education and $55.6 for the Department of Defense. These figures are not definitive since there may be additional earmarked funds that have yet to be identified in the various FY 1987 authorization and appropriation bills.

Government, have the potential to contribute to local and regional economic development. Further, it is believed by many university officials and some Members of Congress that such partnerships will not occur without suitable facilities for conducting modern research.

IS THERE A NEED FOR FACILITIES PEER REVIEW?

According to Robert M. Rosenzweig, president of the Association of American Universities (AAU)[226] the issue "involves a number of instances in which the Congress has made appropriations for the construction of research facilities at particular universities without either a competitive application process or a professional review prior to approval."[227] Dr. Rosenzweig continued by stating that up to now, Congress usually has not been involved in decisions about scientific projects to such an extent. Such decisions "have been made almost entirely without direct congressional involvement, and almost always only after competent professional review of the merits of the work to be done."[228]

A number of educational organizations, the Office of Science and Technology Policy, and the National Science Board of the National Science Foundation have issued statements strongly supporting peer review for funding the construction of university research facilities. For example, in October of 1983, the AAU adopted a statement affirming

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226 AAU represents 56 member universities, most of them major recipients of Federal research and development funding usually under the peer review process. The AAU has become the voice of academic big science.

227 Testimony before the House Science and Technology Committee, Task Force on Science Policy, June 26, 1986. p. 6.

228 Ibid., p. 9.

"the practice of awarding funds for the support of science on the basis of scientific merit, judged in an objective and informed manner," and urging all (primarily the academic community) "to refrain from actions that would make scientific decisions a test of political influence rather than a judge on the quality of work to be done."

Those who oppose this method of funding research facilities contend that this procedure undermines the long established scientific peer review process, which, some say, has been the mechanism for maintaining the excellence of American science. For instance the National Science Board contends that diverting scarce research dollars to projects of "questionable" scientific merit could "threaten the integrity of the U.S. scientific enterprise that is the basis of the scientific, technical, and economic competitive position of the United States in the world."[229] The NSB study also pointed out that circumventing the peer review process for some facilities could begin to undermine the peer review system of Federal support for research at colleges and universities.

To some degree this may already have occurred. Representatives from the Department of Energy (DOE) and the Department of Defense (DOD) have reported that direct FY 1987 appropriations of $69.7 million and $55.6 million respectively, will be supported primarily by funds that were originally designated for research. Administration and academic officials contend this represents cuts in DOE and DOD supported research projects that had been reviewed and approved through a competitive peer review process. While a majority of Congressmen endorse direct funding of some research facilities

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229 Report of the NSB Committee On Excellence In Science and Engineering. The National Science Board, Feb. 22, 1985. p. 2.

projects, as evidenced by the legislation enacted, some members object. For instance, Representative Robert Walker stated that congressional approval of facilities without peer review by scientists reinforces the belief that "political determinations are made about science rather than good academic scientific decisions."[230] Clearly, these views do not go uncontested.

DO ACTUAL MECHANISMS FOR FACILITIES PEER REVIEW CURRENTLY EXIST?

A number of educational officials believe that direct congressional appropriations does not circumvent peer review. They contend there currently is no formal, well developed or commonly used peer review procedure for funding new university research facilities. This was echoed by M. Richard Rose, President of the Rochester Institute of Technology when he stated, "the criticism that has been leveled at Congress and at universities seeking direct Federal support is based on the false hypothesis that such action circumvents some accepted procedure, when in fact such a procedure does not exist."[231] The Senate DOD Appropriations Committee earmarked, for FY 1987, $11.1 million to help establish the Center for Microelectronics Engineering at Rochester. According to President Rose, "while it is standard practice with respect to research grants, peer review has virtually no part in the allocation of funds for facilities."[232]

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230 House Endorses Pork Barrel Funding. Science, v. 233, Aug. 8, 1986. p. 617.

231 Pork-Barrel Science vs. Peer Review. The Chronicle of Higher Education, Oct. 8, 1986. p. 96.

232 Ibid.

Testifying before the Task Force on Science Policy, John Silber, President of Boston University, defended direct congressional appropriations for research facilities. In FY 1984 Boston University received $19 million in Federal funds to assist in the development of a new $90 million Science and Engineering Center. Dr Silber testified that bypassing peer review for facilities does not undermine the peer review process. Since Federal funds to build research facilities, for the most part, were never subject to "the traditional peer review that applied to proposals from individual investigators."[233]

According to Dr. Silber, "the evidence clearly shows that the real pork barrel in scientific research is the system that benefits the very research universities that have been loudest in claiming the purity of peer review."[234] The idea of peer review Dr. Silber said is commendable if it is applied in part to broaden the institutional and geographic base of science research in the United States. In practice many critics say, the pattern of research awards made using the peer review system is seriously flawed because many smaller schools never qualify for research awards. For example, Dr. Silber pointed out that in

> FY 1983 20 institutions, in three geographic regions of the country (Northeast, Midwest, and West, primarily California) received 40 percent of the total awarded to all 592 research universities receiving Federal research and development (R&D) funding.

Further, in "FY 1983, the top 10 institutions receiving support from

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233 Prepared statement of Dr. John R. Silber, Science in the Political Process. Task Force on Science Policy, Committee on Science and Technology, 99th Cong., 1st Sess., June 25-26, 1985. p. 68.

234 Ibid., p. 72.

NSF received 30 percent of all NSF funds and the top 20 institutions received 46 percent of all NSF funds."[235]

President Silber argued that these top universities are actually members of an academic cartel attempting to preserve the current peer review system because "it confers so many benefits upon them."[236] Consequently, the top universities have strongly opposed direct appropriations, because if this practice becomes widespread it could reduce their level of Federal R&D funding.

Finally, Dr. Silber estimated that of the $50.9 billion spent on R&D by the Federal Government in FY 1985, only about $4 billion, or about $.08 of every Federal R&D dollar was actually awarded through a peer review process. He stated that almost all of the research support that is awarded through peer review comes to university faculty members (primarily through NSF and NIH) and is carried on in laboratories and other facilities located on university campuses.[237]

Gerald Cassidy, President of Cassidy and Associates, lobbyist for a number of universities, contends that the current peer review system perpetuates the "old boy network." The network flourishes, he contends, because top funded universities possess a group of distinguished investigators that serve on various peer review panels which render project funding decisions that often affect their colleagues in other established universities. These are colleagues

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235 Ibid.

236 Ibid., p. 73.

237 Ibid., p. 70.

they may have gone to school with, know through professional meetings, or have served with on other peer review panels.[238]

> However, a recently released GAO report, noted that:
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> while peer reviewed NIH and NSF research funds appear to be concentrated in a few institutions and States, peer reviewers are more widely disbursed and therefore are not necessarily where the funds are.

Further, GAO reported that NIH and NSF R&D funding is less concentrated in the top ten schools than DOD research funds which are not generally subjected to external peer review as NIH and NSF projects.[239]

CONGRESSIONAL RESPONSE

Members of Congress have also debated the issue of direct appropriations for university research facilities. Members who oppose direct appropriations contend the issue is whether research dollars are going to be spent on the basis of merit and competition instead of political criteria. Congressional supporters of direct appropriations argue on the basis of two beliefs. First, that the Congress has the right to ensure that Federal research dollars are allocated fairly in all regions of the country; and second, that earmarking research dollars for specific institutions is a long-standing congressional tradition.

One of the most recent congressional debates on bypassing peer review occurred in the Senate on June 5, 1986. The debate began when

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238 Working On Capital Hill for Science and Profi.. Science and Government Report, Dec. 1, 1985. p. 3.

239 GAO, University Funding. Patterns of Distribution of Federal Research Funds to Universities. Briefing Report to the Ranking Minority Member, Committee on Appropriations. Feb. 1987. p. 53.

Senator John Danforth introduced an amendment to eliminate $80.6 million of earmarked funds that DOD was to spend at ter universities. (See appendix E for the list of universities.) Senator Danforth stated, "the issue before the Senate right now is whether research money to be spent for university research should be earmarked by the Appropriations Committee or, rather whether that money should be spent according to a competitive process . . ."[240] The Senator pointed out that in FY 1982 Congress earmarked $3 million for specific university projects, by FY 1986 that sum had increased to $137.6 million.

Senator Ted Stevens, Chairman of the Appropriations Subcommittee that approved the funds, noted that earmarking research dollars for specific institutions was an old practice that had benefited a number of institutions in the past. Therefore the Senator stated "those of you have already gotten money on a non-peer review basis, I ask you in fairness, why should we not use a non-peer review basis for defense research money?"[241]

Joining Senator John Danforth, Senator Jeff Bingamann argued a number of negative consequences resulting from the congressional designation process for awarding Federal funds to universities. The first, he said, is that "scarce resources are diverced from higher-priority research projects. Second, colleges are encouraged to become more involved in political strategies for obtaining funds than in developing the most competitive new scientific proposals."[242]

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240 The Congressional Record, June 5, 1986. p. S 6890.

241 Ibid., p. S 6893.

242 Ibid., p. S 6894.

Senator Dennis DeConcini, defending a $25 million grant for Arizona State raised the issue of fairness. He said:

> over 50 percent of the Federal research money goes to 16 States every year . . . We have a right to compete, he said, We cannot compete. I am proud of my Arizona State University and the science and engineering technology center they have proposed, but they have done it without any Federal help so far because it all goes to the elite eastern or California high-tech schools. It is time we called a stop to that. We are talking about peer-review. Well, let us make peer review equitable, not just of the elite.[243]

Senator Long followed by indicating "I am sort of in the dark in this matter. When did we agree that the peers would cut the melon or decide who would get the money?"[244]

Senator Danforth reminded Senator Russell Long that included in the 1984 Deficit Reduction Act was congressional language to the effect that Government grants should be awarded competitively and that the peer review system was an appropriate process to use. To which Senator Long replied,

> Am I to understand that . . . Congress says we are not going to have any say about who gets this money: are we going to have some peers decide who gets this money? Now I understand why Louisiana has been getting so little. I did not know about it.[245]

Finally, Senator Thomas Eagleton argued that the Congress has no business determining what scientific projects the Department of Defense, the National Science Foundation, or the National Institutes of Health should be funding. He said, "Congress simply does not know enough to make those judgments."

> He continued by indicating that not one of the 11 projects had been requested by the Defense Department. Not one had been

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243 Ibid., p. S 6897.

244 Ibid.

245 Ibid.

authorized by Congress and not one would be subject to the established procedures for scientific competition.[246]

With the conclusion of the debate, the Senate voted in favor of the Danforth amendment, eliminating the earmarked funding for the universities. However, three weeks later, a House and Senate conference committee adopted an amendment providing funding for nine of the universities. (Funding for the Arizona State was not included.) On June 24 and June 26 the House and then the Senate approved funding the $55.6 million for the nine universities contained within the conference report.

In July the House took up the issue of bypassing peer review. The House debate focused on eight projects that the Appropriations Committee bill directed the DOE to fund in FY 1987. Three projects involved continued congressional support of research facilities that have been funded in the past, while the remaining five represented new starts. (See appendix F for the list of university projects.)

When the DOE bill reached the floor, Representative Robert Walker introduced and amendment to block funding for the projects. The Congressmen indicated that "the projects had not been peer reviewed for scientific merit and that the expenditure had not been approved by the House Committee on Science and Technology, which is supposed to authorize DOE programs."[247]

However Representative Tom Bevill argued that Congress should have some authority to determine where some of the Nation's federal research dollars are spent. "We are being asked for Congress to delegate its responsibility to these peers to handle most of the

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246 Ibid., p. S 6966.

247 The Congressional Record, July 23, 1986, p. H 4766.

research money in this country," he stated. "Let us let the Congress handle a little of the money."[248]

Representative Manuel Lujan, the ranking minority member of the Science and Technology Committee, opposed the Walker amendment on the basis of geographical distribution of Federal R&D money. He said that 51 percent of Federal R&D funds goes to only 31 universities, while 41 percent went to 20 universities and 26 percent went to only 10 universities. Further, no Southeast or Southwest universities are in the top 20. "Clearly, Congress has a role to play in redressing this imbalance," he argued."[249] Representative Walker's amendment was defeated 315 to 106.

STATUTORY REQUIREMENT FOR PEER REVIEW

Despite the contention of some academic officials, requirements currently exist requiring peer review of certain research facilities. For example, as indicated in chapter four, the National Cancer Institute's, National Cancer Advisory Board (NCAB) is required by law (42 USC 286) to review all funds, public and private, for the construction of cancer research centers. The NIH has developed an agency-wide policy requiring peer review of proposed research facilities for all their research institutes based on this statutory requirement. Nevertheless, Congress can still become involved in facilities funding decisions after completion of NIH's peer review process.

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248 Ibid., p. H 4768.

249 Ibid., p. H 4770.

For example, the Senate FY 1986 appropriations bill for the Department of Health and Human Services (HHS), specified that $4.5 million should be transferred to HHS's General Department Management Fund and awarded to the University of West Virginia to help build the Mary Babb Randolph Cancer center. The original proposal to build the Center was reviewed twice by the NCAB and turned down both times. In qualified support for the peer review process, the final report of the Senate Appropriations Committee recognized "all Federal research money that this Center may obtain will be received through the peer review process as directed by the National Cancer Act."[250]

During the 1960s when the Federal Government had an active facilities program, Federal R&D agencies implemented a number of procedures for merit peer review of facilities. The National Science Foundation established peer review requirements for its "New Centers of Excellence" program. As an earlier chapter indicated, the major goals of the program were to develop new university research centers as well as improve the quality of science and engineering education. Some of the major considerations NSF developed for the peer review process were: the likely gain in scientific productivity per million dollars invested, commitment of State governments to provide matching grants, and the bility of proposing universities to recruit and retain faculty competent to conduct the new programs.[251]

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250 R&D Pork Barrel: It's an Old Habit in Congress. Science & Government Report, Jan. 15, 1986. p. 7.

251 Academic Research Facilities' Financing Strategies. National Science Board, Working Group Six. Federal Funding of Academic Research Facilities, 1986. p. 56. (Hereafter referred to as the Financing Strategies Conference.)

In the case of NASA's "Sustaining University Program," the agency relied on its own internal technical expertise to review university research facilities proposals. Different proposals were reviewed internally and decisions were made by the NASA administrator based on anticipated return on investment. Another major criteria was the institution's involvement in NASA's research programs.[252]

More recently, DOD utilized what might be called a procurement model to establish the Software Engineering Institute (SEI) at Carnegie Mellon University. After DOD had received congressional funding to establish the Institute, the Pentagon placed a request for proposals in the Commerce Business Daily and the Federal Register. The final seven proposals that were received were first reviewed by an evaluation board of civilian and military representatives including NASA and National Security Agency representatives. The Board conducted proposed site visits as well as evaluating the proposals technical merits. The next level of review involved civilian and military senior research executives, with the final decisions made by the Undersecretary for Research and Engineering. DOD acknowledged substantial lobbying, nevertheless, the Pentagon contends the final decision was made on the technical merits of the winning proposal.[253]

COMPREHENSIVE MERIT REVIEW

In recognition of the controversy that has surrounded peer review of university research facilities, the Financing Strategies Conference

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252 Ibid., p. 57.

253 Ibid.

introduced the concept of comprehensive merit review.[254] The report argues that proposals to fund the construction of academic teaching and research facilities require a broader review procedure than individual research grants. This was found especially true since many of these research facilities are perceived as important components of regional economic development.

The NSB report recommends that when developing a procedure for reviewing academic research facilities, funding agencies should seek a procedure for evaluating the technical merits of the proposal that ensures:

1. The existing or proposed programs of the institution in question are adequate to achieve the stated goals;

2. The people in place or proposed for conducting the programs proposed for the facility in question are capable of competent execution of the programs;

3. The proposed institution is able to achieve the goals intended by Congress and the agency involved;

4. The capacity of the area, or of the institution, is adequate to provide the transportation, communication, supplies, water, and other similar resources, and other necessary services; and

5. The cost of the facility will be reasonable.[255]

Finally the Financing Facilities Conference report acknowledges that the

> "allocation process for research facilities is not exclusively the result of a competition among proposals for identical facilities . . . the process is the result of an evaluation on a case-by-case basis of technical merit, local capabilities and aspirations, and other factors . . . social, economic, and political considerations."

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254 Ibid., p. 53.

255 Ibid., p. 55.

For these reasons, the phrase "comprehensive merit evaluation" best describes the process for review of research facility proposals.[256]

Essentially, some of the academic officials attending the financing conference were trying to restate their support of scientific peer review for facility funding, while recognizing other factors, including politics, would ultimately play a role in the final selection. Those at the meeting who opposed the idea of "comprehensive merit review" did so on the basis that it establishes no boundary conditions. They contended that a decision to fund a facility "could respond to any number of considerations that conceivably fall under its rubric." Further, the introduction of a new term will only confuse the current situation, "muddying the waters with imprecise guidelines, with decision factors that are not weighted and that are open ended."[257]

In spite of continuous outcries, led by AAU and other educational organizations, the practice of universities going directly to the Congress and bypassing peer review continues to grow. Consequently, AAU has declared for the time being, a "cease fire" and organized the "Working Committee on Principles, Policies, and Procedures in the Award of Federal Funds for University Research Facilities and Research Projects," to reevaluate the peer review issue. AAU's announcement indicated that "pressures on university leaders and Members of Congress that lead to earmarking show no signs of abating. The present circumstances is one in which all major organized voices of higher education and research oppose the practice, yet it continues

256 Ibid., p. 58.

257 Ibid., p. 80.

and even appears to be growing." The announcement continues by indicating,

> There is increasing concern in both government and the universities that we may face a future in which informed judgments about intellectual and scientific quality are no longer central to Federal decision making about funding for science and engineering.[258]

One of the unusual aspects of the announcement is the actual make-up of the committee. As expected the working committee will consist of university representatives, including Washington lobbyists that have lobbied Congress for facilities funding. Surprisingly, congressional representatives from both the House and Senate Appropriations Subcommittees on Labor, Health and Human Services, and Education, and the Legislative Assistant to John Danforth, will also serve on the committee.

The purpose of the committee's report, is to,

> review the present dilemma and to suggest ways in which university and government leaders might be brought into agreement on how funding decisions on university science and engineering research facilities and projects can be based on informed judgments of intellectual quality while recognizing other legitimate interests.[259]

The key phrase in this statement is "other legitimate interests." Those within the academic community believe that this phrase may represent AAU's willingness to recognize that broader consideration, other than strictly scientific merit review, must be weighed when decisions about university research facilities are made. This is what the participants of the Facilities Financing Conference had in mind when they introduced the idea of comprehensive merit review. One AAU

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258 AAU Announcement on The Working Committee On Principles, Policies and Procedures. In The Award Of Federal Funds for University Research Facilities and Research Projects, Sept. 29, 1986.

259 AAU Announcement, Sept. 29, 1986.

official noted that after some of AAU's own members became recipients of direct appropriations, AAU President Robert M. Rosenzweig decided that his organization should reevaluate its position on peer review of research facilities.[260]

Although the final version of the report has not been released, the report now appears likely to urge higher-education associations to oppose congressional earmarking for facilities projects when the money is diverted from Federal R&D funds. The AAU committee is also expected to recommend that Congress establish a new Federal program to support academic facilities construction.[261]

CONCLUSION

Many in Congress and academia believe the growing trend toward direct Congressional appropriations for facilities is a barometer of the need to modernize university research facilities. However, congressional earmarking of research and development funds may also be a perception of something much larger; the overall importance of American science and technological development as an engine for local, regional and national economic development. The development may also signify the evolution of direct political participation by universities at the congressional level.

Numerous reports, such as the President's Commission on Industrial Competitiveness and the White House Science Council: Panel On the Health of U.S. Colleges and Universities, have concluded that

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260 Statement of an AAU official, Oct. 31, 1986.

261 Personal communication with AAU committee member, Mar. 18, 1987.

the overall health of the American scientific enterprise is vital to future U.S. international competitiveness. This was stressed by Representative Buddy MacKay when he stated:

> You can't sell peer review per se. I have sat on committees where you have tried. Let me tell you something: "peer review" is not a self-defining term, and when you finish trying to sell that concept to a group of people who have all kinds of other priorities on their minds, it is not coming across. You've got to sell peer review for some other reason, and that other reason has to be something that they and their constituents can get excited about, and I think the answer is competitiveness.[262]

Further, Members of Congress, and various State and academic representatives perceive university research and technology centers as a critical base for state and regional economic development. Therefore, Members of Congress and university officials are willing to bypass a peer review system they believe is not fair. Consequently, elected representatives will continue to receive pressure from various academic interests groups to make sure their universities possess the necessary infrastructure to become part of the scientific enterprise. As a result, it seems likely that direct congressional funding for scientific facilities will continue in the near future.

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262 Financing Strategies Conference, p. 70.

CHAPTER IX. IMPACT ON EDUCATION AND RESEARCH

INTRODUCTION

A number of university research administrators have stated that outdated university research facilities have forced many universities to alter their science education programs, change laboratory exercises for some courses, or even cancel some classroom laboratory activities all together. According to the AAU study,

> researchers in all fields surveyed report a growing concern that the research and advanced education programs with which they are familiar are falling behind the leading edge in both quality and productivity . . . As a result, many departments in highly regarded universities are experiencing a growing difficulty in attracting and holding quality researchers and graduate students.[263]

The quality decline of research facilities, therefore, has been a major contributor to the loss of top researchers and graduate students, experienced by many universities, to the private sector where facilities are considered better. This shift may not result in a decline of the Nation's total research talent and effort, but it does mean a lessening of the kinds of basic, free inquiry research usually practiced in universities.

This chapter will examine the implications of potentially inadequate research facilities for graduate and undergraduate education and research at the Nation's universities. However, before

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263 AAU Study, p. 11.

examining this issue it is necessary to review some of the important benefits of conducting basic science research at the Nations' universities.

Linda S. Wilson, Vice President for Research, at the University of Michigan, in her paper, "The Capital Facilities Dilemma: Implications for Graduate Education and Research," noted that the three principal features of the U.S. science support system are concentration of basic research in the universities, integration of advanced research with graduate instruction, and emphasis on support of research projects rather than support of individual universities.[264] She pointed out that the integration of advanced research and graduate study is a primary characteristic of the U.S. system of higher education. It allows students to participate in original research in which they learn the latest techniques in various research fields and is primarily responsible for educating and training the Nation's future scientists and engineers.

The Wilson paper identifies a number of ways in which the current conditions of university research facilities affect the education and research capabilities at different colleges and universities. Further, other facility studies reviewed in this report, including AAU's, NSF's PI survey, and NSF's recent doctoral granting survey coincide with many of Wilson's findings.

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264 Wilson, Linda S. The Capital Facilities Dilemma. In The State of Graduate Education. Ed. Bruce, L. R. Smith. Brookings Institution, Washington, D.C. 1985. p. 122.

MAJOR AREAS OF IMPACT

Quality and Productivity of Faculty

Wilson contended that perhaps the most serious impact of inadequate research facilities is the university's inability to recruit and retain the most productive faculty members and outstanding graduate students.[265] The AAU study reinforced this observation by indicating that their survey results showed,

> Some departments report almost insurmountable problems in their recruiting efforts, not only because of shortages of Ph.D.s in certain fields, but also because they are unable to offer candidates the modern research environments necessary to conduct competitive research.[266]

As an example, Dr. Kenneth Miller, a biologist at Brown University, predicted that because his university and others cannot purchase modern electron microscopes, American leadership in cell biology and ultra structural studies may well be surrendered to well-equipped laboratories in Europe and Japan. Miller believes that in the future America's best students may choose to study overseas, rather in American universities that have inferior research facilities.[267] Others in the academic community see this happening in the near future. Still others see an inevitable evolution toward a world scientific community with centers of excellence in various fields in several advanced nations competing and cooperating.

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265 Ibid., p. 126.

266 AAU Study, p. 11.

267 Ibid., p. 12.

Nature and Extent of Science Interaction

According to Wilson the current conditions of university research facilities affects the degree of collaboration and interaction among scientists and students in the same and different fields; consequently affecting the quality of education and impeding scientific progress. Further, Dr. Wilson argued that the dispersal of individual research groups because of unavailability of contiguous research space undermines the quality of graduate research training.[268] PIs in NSF's survey mentioned the problem of space more frequently than any other problem. In fact, 38 percent of the PIs said their research facilities were "crowded".[269]

Thirty eight percent of the research administrators in NSF's doctoral granting survey reported that a lack of campus space was a problem in addressing new facility construction. Essentially the research administrators said that the lack of available contiguous space prevented them from locating groups of scientific teams that must work together in additional new space.[270] Further, 95 percent of the research administrators said they had less space than they needed,[271] while 38 percent of the grantees in NSF's PI survey considered their research space crowded.[272]

Responding to the AAU survey, Dr. Ralph Angle of the Cornell University Medical School, stated,

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268 Wilson, p. 125.

269 NSF PI Survey, p. 11.

270 NSF, Doctoral Granting Survey, p. 27.

271 Ibid., p. A-9.

272 NSF, PI Survey, p. 11.

> Under present circumstances there is virtually no room for the development of new programs in biomedical research. We have no facilities adequate for recombinant DNA research. We have no storage facility for many hazardous chemicals. About 35 percent of our research laboratories have not been fully modernized since the buildings were built in 1932 . . .[273]

Choice of Research Problem

According to Wilson the condition of research facilities also affects the type of research a university will select to pursue. She stated that "overcrowding, inflexibility of space, and inadequacy of environmental controls can surely stifle the imagination of students and teachers, especially if they perceive little or no opportunity for improvements."[274] The NSF doctoral granting survey,the AAU report, and GAO's University Finances study had similar findings. The NSF doctoral granting survey found that 92 percent of the research administrators said that the current condition of research facilities limits the types of research projects carried out on their campus.[275]

For instance, according to Michael Meshii, Chairman of the Material Science and Engineering Department of Northwestern University, indicated the Nation lacks the research facilities for producing ultra-high purity metallic specimens such as iron, the basic element of our modern technology. Other nations such as Japan and France are ahead of the United States. Dr. Meshii went on to state, "because of this American universities will likely miss out on the opportunity to discover and understand the intrinsic properties of

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273 AAU Study, p. 12.

274 Wilson, p. 124.

275 NSF Doctoral Granting Survey, p. 26.

[ultra-high purity metallic specimens] iron and steel."[276] Twenty of the 23 universities that participated in the GAO study reported that the inadequacy of present research facilities was a "leading constraint" to the type of research they were currently conducting.[277]

Finally, limitations on research facilities may lead to conservative science. Wilson noted that those who decide what researchers have access to shared laboratory facilities may discriminate against research that has the potential for high payoff but is highly speculative. For example, Wilson speculated that with research space at such a premium, some universities officials may be reluctant to encourage their less established researchers to engage in what might be considered more theoretical research.[278]

Validity of Research Results

Inadequate research facilities may also compromise the validity of research results. For example, Wilson pointed out that crowding can limit access to research facilities and reduce the experimentation and replication needed to ensure the generalizability of the original research work. Further, older research facilities usually experience more down-time, thus hurting research productivity. NSF' principal investigator survey found that 69 percent of those interviewed lost some research time, in some cases more than three weeks, due to facilities-related failure in the past year.[279] Inadequate air

276 AAU Study, p. 18.

277 GAO Study, p. 51.

278 Wilson, p. 125.

279 NSF, PI Survey, p. 13.

conditioning capabilities can lead to as much as 50 percent down-time in the summer months. Buildings with extensive deferred maintenance and just aging can experience leaks, which ruin instrumentation and experiments and interrupt current research.280

At UCLA, Dr. Tom Collins told AAU representatives that because of inadequate facilities, the engineering faculty is unable to undertake the kinds of research which are of most interest to them and which could greatly contribute to scientific advancement. Because UCLA does not have the most up to date equipment, researchers are often required to "jerry rig" equipment. This wastes valuable research time and often this "bailing wire and chewing gum" method runs the risk of generating unreliable or imprecise data."281

Nature and Type of Instruction

The actual educational experience of college students appears to be very much affected by the current condition of research facilities says Wilson. The availability of research facilities for individual graduate students has a significant impact on how well that student is able to develop as an independent investigator. Wilson suggested that deteriorating physical plants and obsolete equipment have already placed many programs, especially engineering, far behind current professional practices. Wilson concludes that when universities lack in the state-of-the-art facilities they are unable to meet the needs

280 Wilson, p. 126.

281 AAU Study, p. 13.

of government and industry for highly trained science and engineering personnel.[282]

Dr. M.A. Eisenberg of the University of Florida School of Engineering echoed this observation in the AAU study when he said,

> perhaps the most insidious effect of our inadequate facilities is the impact on the education program. Future generations of engineers and scientists are being educated in an environment that does not reflect the current state of technology. To the extent we do not have modern facilities, we tend to perpetuate the teaching of outmoded methodologies.[283]

As mentioned earlier, this problem also transcends to undergraduate education as well. According to the Report of the White House Science Council, constraints within university research facilities also affect the extent to which undergraduates are able to participate in research. Laboratories which limit undergraduate participation in research will probably have a negative effect on the recruitment of undergraduates into graduate study as well as their preparation for graduate study.

Responsiveness to Regional and National Research Needs

Research facilities also affect the transfer of technology to industry. The growing nature of university-industry cooperative ventures represents, in many cases, an expansion in the university's scope of interest. Many of these opportunities will require additional or updated university research facilities. This is especially true for cooperative efforts with high technology enterprises and other small business. Few of these organizations will

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282 Wilson, p. 127.

283 AAU Study, p. 13.

have their own research facilities. Consequently, those universities that do not have adequate research facilities will not be able to take advantage of these cooperative venture opportunities.[284]

Environment and Personal Safety

According to Dr. Wilson there is a concern that there are now a growing number of universities that are unable to take all the precautions to assure safety in the laboratory. As scientific research reaches into new areas, different and potential new hazards emerge and must be addressed. Universities that have limited resources to make major renovations in old buildings designed for an earlier era of research, often are forced to make difficult compromises. To some extent, safety education, efforts in laboratory "housekeeping", and extra attentiveness and careful segregation of risks can compensate for inadequacies in facilities. However, this usually results in some lost research and education productivity, not to mention compromising laboratory activities.[285] Over 30 percent of the administrators in NSF's PI survey indicated that safety concerns motivated past and current research facilities renovation activities.[286]

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284 Wilson, p. 125.

285 Ibid., p. 127.

286 NSF, PI Survey, p. 5.

CONCLUSION

A major consequence of a deficient research facility is its implications for the quality of future scientists and engineers produced at that facility. If U.S. colleges and universities as a whole, find it difficult to graduate top scientists and engineers, America's leading position in a number of scientific and technological fields could be challenged. Though this situation does not exist now, such a development might weaken U.S. scientific and technological leadership on which the Nation's economic health and national security depend. This potential threat and the need of many universities to upgrade their research facilities combined with interuniversity competition and reported limitations on sources of funds seems likely to keep the issue of how best to ensure and distribute quality research facilities before the Congress for some time.

[COMMITTEE PRINT]

APPENDICES TO:
BRICK AND MORTAR:
A SUMMARY AND ANALYSIS OF PROPOSALS TO MEET RESEARCH FACILITIES NEEDS ON COLLEGE CAMPUSES
(Serial C)

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**Resigned February 19, 1987 (H Res 89)
***Elected March 30, 1987 (H Res 133)

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The Nation's Deteriorating University Research Facilities A Survey of Recent Expenditures and Projected Needs in Fifteen Universities. Association of American Universities. July 1981.

The Adequacy of University Research Facilities National Science Foundation. PRA Issue Paper 83-64. Feb. 8, 1984.

Report to the chairman, Committee on Science and Technology, House of Representatives. University Finances Research Revenues and Expenditures. GAO. July 1986.

University Research Facilities: Report on a Survey Among National Science Foundation Grantees. National Science Foundation. June 1, 1984.

Science and Engineering Research Facilities at Doctorate-Granting Institutions. National Science Foundation. Sept. 1986.

APPENDIX B

Discussion Paper

Robert L. Sproull
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Member, Government-University-Industry Research Roundtable Council

EXPLICIT RENT CHARGES: ONE APPROACH TO MEETING FACILITY NEEDS

One component of indirect costs or pooled costs in federal R&D grants and contracts to universities is a use allowance or depreciation on buildings in which the research is carried out. The standard allowable use charge is 2 percent per year. A university may include an alternative depreciation rate if it is fully documented. It also is possible to include within pooled costs, with permission of the agency sponsoring the research, the interest on loans taken by the university to construct the building in which the research is being carried out.

Various proposals have been offered for modifying these procedures and for standardizing them across all federal agencies as a way to enhance the nation's capability for maintaining and building state-of-the-art academic research facilities. The approach proposed here is to make the charge for rent of research space an explicit component of federal R&D contracts and grants to universities.

The basic idea of the proposal below is to segregate a substantial portion of the pooled costs of research into a package that is a less controversial and more defensible cost allocation, and an allocation that can be compared with other universities and with industry. Although arguments and dissatisfactions will persist, the intent is to confine them to a smaller part of the whole, and thereby reduce the overall dissatisfaction.

Direct Charge for Rent

The basic approach is to assemble the costs that would appropriately be counted as part of rent of research space and deal separately with the "basket" as rent-per-square-foot of space used on the federally supported project. The claim is that rent is easily understandable and readily comparable, and therefore less controversy could be anticipated in this part of the pooled costs.

The elements in the rent calculation would include: 1) building depreciation and obsolescence, 2) routine maintenance, 3) security, 4) grounds care for grounds immediately attached to the building, 5) parking lot costs for spaces required by people associated with the building space, and 6) heat, power, light, "pure waters" charges.

Item (1) above would be large and the most difficult to calculate initially and to agree upon. The history at each university of renovations

and of modifications to accommodate new programs, would form the basis of the calculation. This could be done on a university-wide basis but for two categories of space, laboratory and office. It would be helpful if the dollars-per-square-foot introduced into the calculation could remain for (say) five years with an agreed annual escalation.

The other items would present fewer problems. In many institutions, insufficient metering-by-building of steam, water, and electricity exists to make accurate calculations. But energy conservation is stimulating more and more metering, and university-averages could probably be divided into laboratory and office rates without much trouble.

As part of the negotiations leading to the agreed rent-per-square-foot, comparisons would be made with laboratory and office space of comparable quality in the same geographic area. These comparisons would be an important part of the defense of the charged rate.

In addition to rent, the other elements of the indirect cost pool would remain, but it would be well to make some changes in these as part of the process of using rent as a major element. "Central Administration" would probably remain about as is. "Research Grants and Contracts Administration," now 100% in the pool, would be put in at some percentage (85%? 90%?) less than 100%. The purpose of this change, which would of course cost the university, is to acknowledge the "bid and proposal" nature of some of this activity and to provide an obvious and evident incentive for the university to keep these costs down.

"Departmental Administration" has been a major bone of contention, and universities usually settle for far less than they think is appropriate. One approach might be to fix the contribution to the pool at x% per full-time-equivalent faculty member. That is, if the sponsored research faculty spent the equivalent of (say) 12.5 FTE's on this research in a department of 25 people, half of the department office costs would go into the pool. This approach probably substantially understates the fair charge to the government, but could be easily defended. Another approach might be to add y$ per FTE (on research) faculty member, where y would be the same country-wide. Since universities usually discount their fair "take" in this area anyway, it might be better to lose full repayment obviously by formula (and publicly claim this as cost sharing) than to lose it (as at present) in complicated, unpublicized negotiations.

Library, student affairs, and other small items would be left unchanged.

Although the numbers could be negotiated so that this approach would result in no gain, no loss to the universities, I would hope that from the beginning of developing and negotiating the approach a serious attempt would be made to make the rent cover fully the cost of space. If this occurred, the universities would have a way of solving their new and renovated space needs that would be far superior to the "pork barrel" end runs and to special federal programs of grants for buildings and renovation. It would automatically adjust the support for space to the amount of federally sponsored work. Since the latter is peer reviewed and less politically noisy than grants for buildings, the whole process of research

support would be a little more effective and less controversial. To the extent that it helped remove pooled costs from worry on Capitol Hill, everyone would benefit.

Issues

There are many questions to be studied and issues to be resolved before one could make this approach into a firm prescription. Clearly, both universities and government would calculate carefully whether they would become "better off." But the proposal could be firmed in such a way that on average neither had an economic advantage. The object is to make the whole interaction an arena of less controversy, better understood and defended, and to return to the flavor of partnership.

Some of the questions are: 1) Would cost-sharing still be required? 2) What differences (if any) should there be between public and private institutions? 3) Could the idea of rent be extended to research equipment use? 4) Should rent-per-square-foot be a constant in each geographical area? for each type (college, research university, off-campus laboratory) of institution? 5) Should a third category of space (in addition to laboratory and office space) be created for computerized offices or dry laboratories? 6) Would a university immediately have a surplus of space, and how much inefficiency would accompany empty space and moving stimulated by a principal investigator's desire to minimize the pooled costs charged to him? 7) Would universities in fact hold P.I.'s financially responsible

for space, or would they average in some way? 8) What are realistic assumptions about the accounting expense associated with calculating rent? How often would it be necessary to revise the figure? 9) When the whole system was put together, would the incentives be correct? 10) How would it interact with initiatives in other areas, such as effort reporting and longevity of grants, not addressed here?

DRAFT of July 8 1985

RLS/DIP:jeb

APPENDIX C

Tax-Exempt Financing for Research Facilities

David Clapp
(June 1985)

Proposal

To establish an independent, nonprofit corporation that would receive funding from Federal appropriations as well as business and public contributions for the purpose of providing guarantees, grants, loans, and other financial assistance to nonprofit independent or state-related educational and/or scientific research projects. The corporation would assist institutions primarily by providing credit support or leveraging for capital borrowing programs in the tax-exempt bond market.

DISCUSSION

Background

Both independent and state-related institutions generally have legal access to the tax-exempt capital markets at the present time. Most state universities can issue tax-exempt bonds (i.e., bonds the interest on which is exempt from Federal income tax) directly as state government instrumentalities. An independent institution can achieve a generally similar result through the auspices of an agency, created at the state or local level, which issues tax-exempt bonds and uses the proceeds to finance capital projects subject only to certain limitations

imposed by state law. Medical schools and hospitals have widely used this type of financing for health care projects as well as higher education institutions. However, in these cases, theinstitution must rely on its own credit rating. The proposal in this paper is intended to remove that requirement.

This paper is concerned with institutions that are exempt from Federal income tax as charitable or educational organizations or as state universities. Other entities, such as proprietary health care corporations or private research companies, may engage in similar projects but have a different financial status because of their different legal status.

In recent years investment bankers have relied increasingly on the financial techniques of leveraging and credit support to enhance the utility of tax-exempt financing to qualifying institutions. These techniques work briefly as follows:

Leveraging: Leveraging refers generally to the practice of adding borrowed funds to funds on hand, in order to "leverage" the funds on hand by enabling the institutions to finance bigger projects. Leveraging is inherent, though not always apparent, in virtually every capital project financing in the tax-exempt market. When an institution uses agency financing for a

project, it is in essence using the borrowing to leverage its own endowment and cash flow. Leverage also occurs in the form of a direct grant or low interest loan provided by a governmental agency in tandem with the tax-exempt borrowing. The Federal Government program for Urban Development Action Grants is an important example, in the area of inner-city renovation, though soon it may be only of historical interest in view of the Administration's proposal to eliminate this program. Agencies themselves occasionally provide leverage to their own borrowers, generally by making grants or loans at a lower interest rate than the interest rate payable by the agency on its own bonds, and subsidizing the difference from agency capital.

Credit Support: Interest rates in the tax-exempt market depend on the credit strength of the borrowing entity in addition to numerous other factors. In this respect the tax-exempt market is similar to the general taxable market, though interest rates in the tax-exempt market are generally a few percentage points below the rates obtainable by a comparable credit in the taxable market, because of the value of the tax exemption to investors. In the tax-exempt market as it exists today, entities offering credit support include insurance companies offering "bond insurance" policies, commercial banks

offering letters of credit, and insurance funds offered by states to their agencies. Bond insurers undertake to pay the principal and interest on the insured bonds if for any reason there is default by the bond issuer. Some bond insurers operate, or "specialize," only in specific, specialized market sectors, such as health care. In view of this fact there may be a potential for ready market acceptance of an insurance program that would concentrate on financings for scientific research as an instance of a specialized market sector. Credit support programs represent a highly efficient form of leveraging in that the asset dollars of the credit provider--such as a bond insurer--will support a vastly greater dollar amount of project financing.

How the Corporation Would Work

Introduction: Formation of a nonprofit corporation is a simple procedure generally requiring little more than filing the articles of incorporation or corporate charter, signed by the individuals serving as the initial trustees, with the state government of the state chosen for incorporation. The laws of most states are similar in dealing with nonprofit corporations and allow the corporation's bylaws to make decisions about the size and composition of the board of trustees, the frequency and

procedure for meetings, and so on. Frequently, a nonprofit corporation will supplement its formal board of trustees with one or more advisory boards composed of persons of distinction in its area. Use of an advisory board might be particularly appropriate in the present case due to the technical nature of the projects the corporation would be considering.

Incorporation under Federal Law is also possible, but would require specific Federal authorization. Several existing programs operate under Federal charters but have evolved to situations where the ties to the Federal Government seem primarily historical or nominal, such as the Federal National Mortgage Association.

The need for funding of reasearch facilities presents the challenge of asking for money for activities that do not have a large natural constituency of voters and whose benefits to society may be perceived by some as being less immediate than other competing demands. A great deal of study and consultation would be necessary to determine the likelihood of a substantial federal appropriation for a project of this type in the present federal budgetary climate or in any climate reasonably foreseeable. Potentially the strongest argument in favor of funding for this corporation would be the leveraging it would

offer in that each dollar of appropriation should lead to many more dollars of actual expenditure on projects.

Charitable foundations tend to prefer making gifts for specific projects as distinguished from ongoing programs such as discussed here for the corporation. In addition, private corporations tend to sponsor research useful to their own product development rather than general purposes. In addition, funds from these sources are inadequate when compared to the national need. Thus the opportunities for capital funding from the private sector may be limited.

Mechanics: In general, the new corporation would be operated using the following mechanics. Congress would appropriate an amount, say $500 million, on a one time, no recourse basis. The money would be invested to yield the highest prudent current return. Institutions wishing to construct research facilities would apply to the corporation for assistance. An advisory board to the corporation would determine the worthiness of the project. The staff of the corporation would examine and pass upon the financial soundness of the applicant and construction cost estimates of the project.

Once the project is approved by both the advisory board and the corporation staff, the applicant institution would enter into a loan agreement with the corporation. The loan agreement would pledge certain assets of the institution to the corporation and contain certain covenants as to performance. The principal covenants would be, from the Corporation, the agreement to lend funds which, together with other available funds, will be used to construct the project, and from the applicant institution, the promise to repay the loan over an agreed time period (say 10-30 years) and the agreement to use the loan to construct the project and operate it as a research facility (this latter term would be defined).

From time to time the corporation would combine groups of projects into appropriate gross amounts (say $100 million) and then sell its tax-exempt bonds to provide loan funds. The bonds would be secured by and payable from (i) moneys due under the loan agreements, (ii) the invested $500 million trust fund and (iii) a letter of credit or other financial guaranty in an amount to assure the highest possible credit ratings on the tax exempt debt.

The institution's interest rate would be computed to be the corporation's bond rate less an amount of subsidy running from the corporation to the institution. The subsidy, which could be determined either uniformly or according to relative need, would take the form of a grant to the institution and would be derived from income earned on the $500 million trust fund. Since the $500 million principal is not expected to be diminished the leverage provided by this money is, in effect, used over and over.

If an institution defaults on its loan repayments, the corporation will reserve the right to enter upon and sell the research facility and to substitute another project into the loan package financed by a particular corporation bond issue. However, the institution's obligations to the corporation under its loan agreement would not be relieved.

The amoritization schedule for loan agreements would be tailored to match the specific project. For instance, a project for which the borrowed funds would generally be used for a building (as opposed to equipment) would likely amortize over the useful life of the building. If a project were mostly equipment, amortization might be shorter, reflecting the shorter useful life.

Observations: The advisory board could and should operate independently. This would promote fair treatment when the merits of research projects are being discussed and decided upon. This board would determine the material required from institutions making applications for assistance. In addition, the board would make site visits, post-completion inspections, etc.

The corporation staff would examine all the finances and determine the need for the projects and the ability to repay loans. This "underwriting" function can be performed in a manner which will lend credibility and stability to the overall program.

The $500 Million Trust Fund, and the loan-bond structure as a whole, should not inhibit or discourage corporate and foundation gifts and grants to projects. On the contrary, since bond funds could be used in much the same way as matching funds are in other programs, giving should actually increase--thereby increasing the ability to find 100% funding for projects on a combined basis. Also, loans could be repaid from gifts received over the usual 3 - 5 year pledge periods, but construction of projects will not be slowed by insufficient available funds.

Corporation tax exempt bond issues will be nationally popular and will attract investors. The nature of the program, with a high national profile, together with the loan agreements and credit support, will present triple A security for bond purchasers. The fact that the corporation will issue bonds several times a year will create a wide and continuing market for its issues. The result would be a vastly increased financial capability for the construction of research facilities.

State Law Authorization for Projects

State laws providing for agency financing are not uniform in their definitions of facilities qualifying for financing. The following is an example of relatively broad language that could apply to a research facility at a college or university.

> *"Eligible facility" means any site, structure, or equipment suitable for use in academic, research, and cultural activities at a college, including but not limited to, classrooms, laboratories, libraries, research facilities, academic buildings, housing units, dining facilities, administration buildings, health care facilities, parking, maintenance, storage and utility facilities, and all the*

facilities, equipment materials and furnishings necessary and usually attendant thereto: Provided, That "eligible facility" shall not include any facility used or to be used for sectarian instruction or study, or as a place for devotional activities or religious worship.

This language authorizes financing research facilities of a college or university. It would be less likely for state law to authorize financing of research facilities at independent institutions which did not have an educational program in the normal sense of a student body, faculty, classrooms, and so on.

Federal Tax Authorization

The program of the corporation as described above would not require any amendment to the provisions of the Internal Revenue Code pertaining to tax-exempt financing. However, the Administration has recommended amendments to eliminate the ability of authorities to issue tax-exempt bonds for the benefit of private educational or health care institutions. If the Congress accepts the Administration's recommendation but wishes to preserve the program described here for the corporation,

Congress could enact a special provision dealing with the matter.

All of the foregoing is intentionally brief and certain details as to legality and mechanics are not included. This paper does, however, provide a basis for discussion and uses concepts and ideas which have been used in other situations in several states across the country.

William F. Massy
July 1, 1985

CONFERENCE ON ACADEMIC RESEARCH FACILITIES

Outline of Alternative Sources of Finance

Type of Financing	Typical Source of Funds
A. Equity financing: payment up front	
1. University, school or departmental reserves	1. Accumulated from: o Funded depreciation charges, if any o Part operating surpluses o General gifts
2. Restricted gifts or grants from private services (lead or "name" gift, other gifts)	2. Obtained from: o Individuals o Foundations o Corporations
3. Line items in sponsored research or instruction agreements (grants or contracts)	3. With: o Corporations o Foundations o State and local government o Federal agencies
4. Joint ventures for research or instruction	4. With: o Corporations o Foundations o State and local government
5. State appropriations (public institutions only)	5. State government
6. Federal facilities grants[a]	6. Federal government

CONFERENCE ON ACADEMIC RESEARCH FACILITIES

Outline of Alternative Sources of Finance (continued)

Type of Financing	Typical Source of Funds
B. Debt financing: payment over time	
1. Tax exempt bonds and notes[b]	Applies to all sources (B1-B4)
2. Taxable bonds and notes[c]	Interest payments: o Indirect cost recovery (external interest is allowable on Federal grants and contracts) o Line items in sponsored agreements o General income, gifts, etc. o Restricted gifts
3. Government loans (subsidized or unsubsidized)[a]	Principal repayment: o Indirect cost recovery (depreciation charges) o Line items in sponsored agreements o General income, gifts, etc. o Restricted gifts
4. Government guaranteed bonds and notes (tax exempt or taxable)[a]	

[a] The federal government currently has no general programs applicable to research facilities.

[b] Access of private institutions to tax exempt financing would be eliminated under the Treasury II tax reform proposal. Public institutions would be unaffected. The result would be to further increase the gap between the tuition and fees and the indirect cost rates of private and public institutions.

[c] Used mainly by private institutions when access to tax exempt financing cannot be obtained.

APPENDIX D

Appendices

Appendix A-Facilities Audit

The facilities audit, performed by in-house staff, consultants, or combinations of both, includes a physical and functional analysis of each building. The physical analysis can be done by separating the building into components of primary structure, secondary structure, service systems and safety standards. This methodology uses the following physical analysis categories:

(1) Primary Structure-includes the structural load-bearing elements of a building, foundations, the roofing system, and the flooring system.
(2) Secondary Structure-Includes architectural elements and items normally appearing in room and door schedules, interior walls, and ceilings.
(3) Service Systems-Includes all mechanical and electrical components, cooling, heating, plumbing, and conveying.
(4) Safety Standards-Includes those systems which are necessary to achieve compliance with applicable building codes, National Fire Protection Association Standards, recognized life safety practices, and Section 504 regulations.
(5) Energy Use Efficiency-Covers both the active and passive energy use systems of the facility.

A functional analysis examines a building's suitability of use for its present occupancy as well as for other programs, its location and other provisions. It can be used to study assignable space adaptability or suitability for present or future use. The analyses is organized so that maximum points have been assigned to 14 building components and three functional categories with a rating in relation to its contribution to the category. The maximum point value assigned to the various building components is shown in Figure A-1.

* Source: Harvey H. Kaiser, Crumbling Academe: Solving the Capital Renewal and Replacement Dilemma

Figure A-1

Facilities Evaluation Summary

	CATEGORY	Maximum Point Value
1.	Primary Structure—Foundation System	13
2.	Primary Structure—Column and Exterior Wall System	13
3.	Primary Structure—Floor System	7
4.	Primary Structure—Roof System	7
	Primary Structure Total	40
5.	Secondary Structure—Ceiling System	3
6.	Secondary Structure—Interior Walls and Partitions	3
7.	Secondary Structure—Window System	2
8.	Secondary Structure—Door System	1
	Secondary Structure Total	9
9.	Service Systems—Cooling	10
10.	Service Systems—Heating	10
11.	Service Systems—Plumbing	5
12.	Service Systems—Electrical	8
13.	Service Systems—Conveying	1
	Service Systems Total	34
14.	Safety Standards	5
	Safety Standards Total	5
15.	Functional Standards—Assignable Space	4
16.	Functional Standards—Adaptability	4
17.	Functional Standards—Suitability	4
	Functional Standards Total	12
	Maximum Total Points for each facility	100

Each category is inspected by the team of auditors and rated, using the classification system developed by the National Center for Education Statistics for the HIGHER EDUCATION INVENTORY AND CLASSIFICATION SURVEY. A condition value multiplier provides the subcategory value as shown in Figure A-2.

Figure A-2
Classification System

Classification	Condition Value Multiplier
(S) Satisfactory-Suitable for continued use with normal maintenance. No capital outlay funds needed during the next five years.	1.0
(2) Remodeling A-Building is currently adequate. Requiring restoration to present acceptable standards without major room use changes, alterations, or modernizations. The approximate cost of "Remodeling A" is not greater than 25 percent of the estimated replacement cost of the building.	0.8 ± .1
(3) Remodeling B-Requiring major updating and/or modernization. The approximate cost of "Remodeling B" is greater than 25 percent, but not greater than 50 percent of the building's replacement cost.	0.5 ± .1
(4) Remodeling C-Requiring major remodeling of the building. The approximate cost of "Remodeling C" is greater than 50 percent of the building's replacement cost.	0.2 ± .1
(U) Unsatisfactory-Structure should be demolished or abandoned because the building is unsafe or structurally unsound, irrespective of the need for the space or the availability of funds for a replacement facility.	0.0

A form combining the description of a building's characteristics, the actual rating of each system and building rating is the Physical Facilities Evaluation Summary.

Figure A-3 Physical Facilities Evaluation Summary

Building Number and Name _____

Location _____

Survey Date _____

Survey Team _____

	Ratings	
	Possible	Actual
PRIMARY STRUCTURE	(40)	( )
1. Foundation System	13	
2. Column and Exterior Wall System	13	
3. Floor System	7	
4. Roof System	7	
SECONDARY STRUCTURE	(9)	
5. Ceiling System	3	
6. Interior Walls and Partitions	3	
7. Window System	2	
8. Door System	1	
SERVICE SYSTEMS	(34)	( )
9. Cooling	10	
10. Heating	10	
11. Plumbing	5	
12. Electrical	8	
13. Conveying	1	
SAFETY STANDARDS	(5)	( )
14. Safety Standards	5	
FUNCTIONAL STANDARDS	(12)	( )
15. Assignable Space	4	
16. Adaptability	4	
17. Suitability	4	
	TOTAL 100	

Figure A-3 Physical Facilities Evaluation Summary

BUILDING RATING

S. Satisfactory	95-100	_____
2. Remodeling—A	75- 94	_____
3. Remodeling—B	55- 74	_____
4. Remodeling—C	35- 54	_____
U. Demolition	0- 34	_____

_____ Building

In the Self-Evaluation process described in the Facilities Audit Workbook is a separate form for rating each system. A typical form for a building system is shown below:

Figure A-4 Primary Structure—Foundation System

A. SYSTEM TYPE

(1) Exterior columns: individual ftgs. and piers _____ prefrilled _____ driven piling _____ continuous ftgs. _____ caissons _____ mats _____

(2) Foundation: materials: steel _____ concrete _____ wood _____ other _____ combination _____

(3) Interior footings: individual ftgs. and piers _____ piling, pile caps and piers _____

(4) Foundation walls: continuous ftgs. _____ grade beams _____

B. SYSTEM EVALUATION	S	2	3	4	U	Comments
(1) Cracked Walls						
(2) Foundation settlement						
(3) Foundation deterioration						
(4) Design load						

C. COMMENTS. _____

D. NUMERICAL EVALUATION (circle one)

	Condition Value Multiplier
(S) Satisfactory	1.0
(2) Remodeling A—Requires restoration, cost not more than 25% of total replacement	0.8 ± .1
(3) Remodeling B—Requires major modernization, cost between 25 and 50% of total replacement	0.5 ± .1
(4) Remodeling C—Requires major remodeling, cost greater than 50% of total replacement	0.2 ± .1
(U) Demolition—System is totally unsatisfactory and cannot be remodeled—replace	0.0

E. NUMERICAL RATING: 13 x (D) (Condition Value Multiplier) = _____

_____ Building

The rating for a system is determined and then multiplied by the Condition Value Multiplier. For example, on line 1 of the Facilities Evaluation Summary (Figure A-3), an evaluation of a building's foundation as "Remodeling A" would give a condition value multiplier of 0.9; this is muluplied by the maximum rating for this category (13 points) for a condition rating of 12.

Appendix B: Cost Estimates for Replacement Value

Cost estimates for priority projects identified in the facilities audit can be developed from the Facilities Evaluation Summary (See Figure B-1). This is not a substitute for a detailed project estimate based on quantities of material and labor. However, it serves as a useful tool in providing order of magnitude costs for comparing projects.

The score of total points assigned to each building evaluated in the Summary represents the percentage of replacement value. The deficit, 100 minus the score, represents the percent of current replacement cost which will be required to repair or rehabilitate the building to meet an acceptable standard of quality. Thus, the product of the deficit, as percent, multiplied by the estimated current construction cost of a new building of the same size, occupancy and function, represents the estimated construction cost of the required repair or rehabilitation.

Sources for current local costs by building type and occupancy are available from an institution's records or from published sources, such as MEANS BUILDING SYSTEMS

Figure B.1

Physical Facilities Evaluation Summary

Building Number & Name Classroom—Office Building

Location Main Campus

Survey Date _____

Survey Team _____

	Ratings	
	Possible	Actual
PRIMARY STRUCTURE	(40)	(35)
1. Foundation System	13	12
2. Column and Exterior Wall System	13	12
3 Floor System	7	6
4. Roof System	7	5

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Figure B.1
Physical Facilities Evaluation Summary

SECONDARY STRUCTURE	[9]		[6]	
5. Ceiling System		3		2
6. Interior Walls and Partitions		3		2
7. Window System		2		1
8. Door System		1		1
SERVICE SYSTEMS	[34]		[19]	
9. Cooling		10		2
10. Heating		10		6
11. Plumbing		5		4
12. Electrical		8		6
13. Conveying		1		1
SAFETY STANDARDS	[5]		[3]	
14. Safety Standards				3
FUNCTIONAL STANDARDS	[12]		[7]	
15. Assignable Space		4		3
16. Adaptability		4		2
17. Suitability		4		2
	TOTAL 100			

BUILDING RATING		
1. Satisfactory	95-100	
2. Remodeling—A	75- 94	
3. Remodeling—B	55- 74	70
4. Remodeling—C	35- 54	
U Demolition	0- 34	

GUIDE, DODGE CONSTRUCTION SYSTEM COSTS, and the BERGER BUILDING AND DESIGN COST FILE. The published sources provide summaries of unit area costs for a variety of buildings, including some specifically identified as college and university types and occupancies. Where sufficient volume of construction history exists for a campus or in a system, this data can be used as primary sources and the cost guides as secondary sources.

The procedure for cost estimating follows three steps. (1) establishing replacement costs by building type, (2) determining the percentage of building deficiencies, and (3) calculating capital renewal and replacement costs.

A summary of estimated replacement values obtained from average costs in the three referenced sources is shown below (Figure B.2). By using the gross square footage of

each building, and the square foot replacement costs for the same building type, the replacement costs of facilities at a campus can be estimated.

Figure B.2
Summary of Estimated Replacement Values of Campus Facilities Building Type

	Gross Square Foot of New Construction July 1, 1982
Administration Building	$ 88.00
Auditoriums	86.00
Dormitories	72.00
Laboratory Schools	72.00
Libraries	86.00
Offices, Classrooms	80.00
Physical Education Facilities	82.00
Science and Engineering Facility	94.00
Student Unions and Cafeterias	82.00

For example, the facilities evaluation summary for a 50,000 gross square foot classroom building in Figure B.1 shows a maximum total point score of 70. Replacement costs are obtained by using the deficiency percentage. The estimated rehabilitation cost (July 1982) for this example would be 30 percent (100-70) times the estimated cost of replacement. The estimated cost of total replacement of $80 per square foot × 50,000 square feet equals $4,000,000. Thus, the estimated cost of rehabilitation for the building is .30 × $4,000,000 = $1,200,000. Individual components rated as priority projects can be estimated in a similar manner. For example, the electrical system rating for the building illustrated in Figure B.1 shows a deficiency of two percent (maximum rating of 8 minus and actual rating of 6). The cost of improvements is = 50,000 square feet × $80 per square foot × 0.02 = $80,000.

APPENDIX E
LIST OF UNIVERSITIES RECEIVING DIRECT CONGRESSIONAL APPROPRIATIONS
FOR RESEARCH FACILITIES

Documents E-1 through E-4 contain a listing of universities that have received direct congressional appropriations, primarily for university research facilities. Documents E-1 and E-2 are from Science and Government Report listing those universities that have received direct congressional appropriations for university research facilities. Although document E-2 indicates that the Senate rejected funding for the ten universities listed on page 4 of E-2, Congress eventually approved funding of all the projects except for Arizona State University. (See chapter eight of this report.)

Document E-3 discusses specific university projects totaling $19.9 million, proposed by Members of Congress which would be funded by the Department of Education. Finally document E-4 contains a listing of all universities that have received direct congressional appropriations from the 96th through the 99th Congress. Not all the funding to universities was for research facilities. Further, many of the universities listed in documents E-1 and E-3 are also included in document E-4.

R&D Pork Barrel: It's an Old Habit in Congress

Congressional pork-barreling for construction and research funds for local universities is often accomplished with such stealth that the extent of these operations tends to be underrated. But that it's a big and growing business is evident from a 4-year review of such appropriations actions, titled "Tally of Congressional Attempts to Provide Special Appropriations to Universities as of December 20, 1985."

The list, covering most but not all of these legislative episodes, was prepared by the Association of American Universities, the Washington-based lobby for big research universities. The AAU has been in the vanguard of opposition to crafty newcomers hauling off funds that in the past predominantly went to its members.

It should be noted that the construction funds were appropriated during a period in which White House policy was generally against putting up new lab buildings in academe. The lobbyists accordingly applaud their success as a gain of funds that would otherwise have been unattainable. The "haves" respond that academic R&D is essentially a zero-sum situation, and that what's gained by lobbying for the home school is mainly subtracted from so-called merit-reviewed awards. In any case, here's the AAU list, showing the calendar year in which the appropriation was voted, institution, amount of money, purpose, and the federal agency providing the funds.

1982

U. of Oklahoma. $3 million. Carl Albert Congressional Research and Studies Center. Dept. of Education

1983

Oregon Health Sciences University. $20.4 million. biomedical information communications center. Dept. of Health and Human Services (HHS)

Tufts U., $2 million. hazardous waste management center. Environmental Protection Agency

U. of New Hampshire, $15 million, space and marines sciences building. Dept. of Ed.

Boston College, $7.5 million, library building. Dept. of Ed

Georgetown U., $820,000, feasibility study for fuel-cell demonstration project, with construction costs estimated at $160 million. Dept. of Defense

Tuskegee Inst., $9 million. center for aerospace engineering and health education. Dept. of Ed.

U. of Hartford. $6.5 million. library building. Dept. of Ed

U. of Georgia. $3.5 million. Institute of Government. Dept. of Ed.

U. of Mass., $3 million. McCormack Institute. Dept. of Ed

U. of Conn., $750,000. pediatric research and training center. HHS

U. of Hawaii. $750,000. rehabilitation research and training center. HHS

Columbia U., $5 million. plus $3 million in 1984 $8 million in 1985. center for chemical research. Dept. of Energy

1984

Boston U., $19 million. high-technology sciences and engineering center. Dept. of Commerce. Economic Development Administration (EDA)

Lincoln U. and Cheyney U., $3.4 million. construction and renovation of shared facility. Dept. of Ed.

Florida State U., $7 million. plus $8.5 million in 1985. supercomputer facility; estimated total cost $63 million. with federal govt. to fund 70 percent. Dept. of Energy

Catholic U., $5 million. plus $8.9 million in 1985. materials laboratory. Dept. of Energy

Northwestern U., $16 million. plus $10.3 million in 1985. basic research industry institute. Dept. of Energy

Oregon Health Sciences U., $1 million. vision research facilities. HHS

U. of N. Carolina. $800,000. expansion of undersea research program. National Oceanic and Atmospheric Administration

U of Oregon $2.3 million plus $8.5 million in 1985. planning and construction funds for science facility. Dept of Energy

(Continued on page 7)

W. Va. Gets its Cancer Center

The intensity of Congressional determination to deliver building funds to the home campuses is illustrated by the case of the Mary Babb Randolph Cancer Center at the University of West Virginia, Morgantown. First-year construction funds totaling $4.5 million have been been made available for the Center, despite the proper workings of a peer-review system that twice turned down the project on grounds of inadequate leadership, staffing, and planning.

A pet project of Senate Minority Leader Robert Byrd (D-W.Va.), the Center was earmarked for funding in the 1985 appropriations bill for the National Cancer Institute. But it failed to gain the approval of the National Cancer Advisory Board, which, by law, has veto power over such NCI grants. The Board later took another look at the project and again turned it down. The money remained in the NCI budget, unspent.

But the West Virginia project, still unapproved by the Board, will go ahead. The 1986 appropriations bill for the Department of Health and Human Services specifies that the $4.5 million should be transferred to HHS General Departmental Management funds and awarded for the cancer center.

As a concession to the peer-review process, the Senate Appropriations Committee report states, "The Committee understands that all federal research moneys that this Center may obtain will be received through the peer review process as directed by the National Cancer Act."

The Annals of Risk-Free Heroics: The Cornell Case

Frank Rhodes, President of Cornell University, is being celebrated as a self-sacrificing hero by the battered and dwindling opponents of Congressional intervention in the award of money for academic research. But close examination suggests that his performance was unaccompanied by any peril to the advantage of his university.

The continuing resolution that a holiday-bound Congress hurriedly passed on December 19 contained numerous Pentagon-financed goodies for academe, including $10 million for computer projects at Cornell.

Upon hearing of this, Rhodes, who has spoken out against such Congressional earmarking, issued a statement in the best obufuscatory tradition of Foggy Bottom communiques:

> . . . Cornell respects the responsibility of Congress to set priorities in broad policy areas such as access to supercomputers and restoring US leadership in supercomputer technology. The University attaches equal importance to the merit review process used by funding agencies to select specific projects for support.

Cornell will not accept funding awards which bypass normal review procedures. We are told that [the amendment containing the funds] was intended to help restore US leadership in supercomputer technology, a purpose we fully support, and was not intended to circumvent such merit review. The University did not develop or support any initiative intended to bypass merit review.

Rhodes' statement drew a lot of praise, typical of which was the plaudit of Robert Rosenzweig, President of the Association of American Universities, who told *Science* that "It was an extraordinarily difficult and principled act."

However, the reality of the situation is that, to the extent that the Pentagon employs "merit review" on such matters, Cornell starts out very far ahead. The funds are for continuing the work that's been underway for about 5 years between Cornell and Floating Point Systems, a computer manufacturer in Oregon, whose senior Senator, Mark Hatfield, Chairman of the Appropriations Committee, introduced the amendment that contained the money for Cornell.

The chance of Cornell not getting the money is close to non-existent.

Appropriations (Continued from page 6)

1985

Indiana U., $6 million, education center. Dept of Ed

Dartmouth College, $15 million, construction, renovation of engineering school facilities. Dept of Commerce, EDA

Drake U. School of Law, $4 million, facilities, etc., for clinical legal services program. Dept. of Justice

Oregon Health Sciences U., $10 million, building rehabilitation, HHS

Tufts U., $500,000, Chinese-American student exchange program, HHS

U. of Kansas, $200,000, remote-sensing research, Dept. of Agriculture, Cooperative State Research Service (CSRS)

U. of Kansas, $9 million, human development center, Dept. of Ed.

U. of N. Dakota, $4 million, energy research center, Dept of Energy

U. of N. Dakota, $4 million, aviation sciences curriculum, Federal Aviation Administration

Florida Memorial College, $3 million, aviation sciences, FAA

Delta State U., $2.3 million, FAA

Loyola U. Law School, $4 million, poverty law center, Dept. of Justice

Mississippi State U., $6 million, center for aquaculture research, Dept. of Agriculture, CSRS

Tulane U., $6 million, energy and biomedical technology center, Dept. of Energy

Brown U., $5 million, information technology demonstration center, Dept. of Energy

Atlanta U., $4.5 million, science and technology center, Dept. of Energy

U. of Alabama, $8 million, energy and mineral research center, Dept of Energy

Syracuse U., $12 million, computer research, DoD continuing resolution for FY 1986, which also included funds for the following:

Oklahoma State U., $1 million, unspecified research

U. of Nevada, Las Vegas, $3.5 million, computer research center

Northeastern U., $13.5 million, engineering research center

Rochester Inst. of Technology, $11 million, microelectronics engineering and imaging sciences

Wichita State U., $5 million, aviation research

U. of Kansas, $2 million, neurotoxin research

Iowa State U., $6.5 million, unspecified research

Oregon Graduate Center, $1 million, advanced semiconductor research

Cornell U., $10 million, computer basic research

Syracuse U., $12 million, computer research

"Scientist" Partners Split

The latest word about *The Scientist*, the national science newspaper originally planned as a joint venture by the Philadelphia-based Institute for Scientific Information and the British weekly *Economist*. The *Economist* has pulled out, but ISI President Eugene Garfield tells SGR that he's going ahead with the venture.

Meanwhile, Garfield and his firm face a civil trial in Federal District Court in Philadelphia on January 21 in a suit brought by a California company alleging piracy of computer software; and criminal charges are under investigation by a federal grand jury (SGR Vol. XV, No. 19.)

Garfield says he still plans to headquarter the paper in Washington, DC, and expects the first issue to be out "in late spring."

Pork-Barrel Rout: Senate Rejects $80-Million Grab

In a legislative battle that may be the turning point of academic pork-barrel politics, the Senate on June 6 wiped out $80 million worth of campus projects that solicitous colleagues sought to finance by tapping into the Pentagon budget. When the final vote was taken, around 1:30 a.m., the projects, slated for 10 universities, were voted down, 58-40.

The decisive anti-pork vote represents an impressive come-back victory by lobbyists for institutions that have long commanded huge slices of federal funds under the so-called peer-reviewed merit system. Now melded into a well-oiled lobbying machine, the "haves" and their allies bombarded the Senate with chilling warnings of danger for American science if local cow colleges and their urban counterparts are given a political boost into the charmed ranks of permanent beneficiaries of federal research spending. The absence of only 2 Senators from the wee-hour proceedings certifies a broad interest in the subject.

The danger warnings, directed to strategically placed Senators, were dispatched by Frank Press, President of the National Academy of Sciences; John P. McTague, then Acting White House Science Adviser; William D. Carey, Executive Offic r of the American Association for the Advancement of Science; Sidney Drell, President of the American Physical Society; Robert L. Clodious, President of the National Association of State Universities and Land Grant Colleges, and, the quarterback of the pork-barrel rout, Robert M. Rosenzweig, President of the Association of American Universities, the 50-institution Washington-based trade association for big research universities.

Defense Secretary Caspar Weinberger joined in with a letter lauding the "competitive process" as essential for maintaining the scientific underpinnings of national security.

The debate got underway with Senator John C. Danforth (R-Mo.) introducing an amendment to eliminate the earmarked university expenditures from the wonderfully titled Urgent Supplemental Appropriations Bill, a non-urgent catchall of odds and ends for which money is scught late in the fiscal year. "The issue is one of merit and competition for spending of research dol-

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Adviser

(Continued from page 2)

mended by Edward Teller, he arrived in the White House job in April 1981, 5th or 6th choice for a post rejected by those who were initially sought, and after most of the Administration was already in place. Having spent most of his career at the Los Alamos National Laboratory as a working researcher, Keyworth wasn't known in Washington policy circles. He quickly signed on as ally and helpmate of Ed Meese, the President's righthand man under one title or another, and thus was able to thrive in the White House snakepit. Not long after Meese left to become Attorney General, Keyworth resigned to set up his own consulting business.

Some of Washington's resident science-policy aficionados now nostalgically look back to the good old days when "Jay" Keyworth was there to attend to the needs of science and fend off the Reaganite cranks who yearned to staff the research agencies with their kind of people. To the astonishment of the liberal academic scientists who initially derided him as inappropriate for what they regarded as science's chief emissary to the presidency, Keyworth delivered the budgets they sought for basic research. Though grudgingly, they had to admit he was a high performer in that regard.

A couple of billion more for university science was simple enough for the Reagan Administration to shell out, since it liked the argument that the science was good for industry and defense. What it also wanted, and got, out of the Keyworth OSTP apparatus was cheerleading for defense and especially for the Strategic Defense Initiative, in each and every of its crackpot permutations since Reagan first announced it in March 1983. Keyworth never hesitated on those subjects, or in parroting the Administration's seamy depictions of the press as disloyal to basic American interests.

What can be expected of Graham as White House Science Adviser? His enthusiasm for armaments is known to his employers, but it's doubtful that they need his help to promote the cause. In regard to support of science, the major pending issue is a push to shift a bit more of federal R&D expenditures toward basic research in universities (SGR Vol. XVI, No. 10). Recommended by a panel headed by David Packard, of Hewlett-Packard, and D. Allan Bromley, of Yale, the proposal needs a lot of hard and influential lobbying if it's to show up in the next federal budget. For that kind of task, the White House Science Adviser can indeed be useful, if he's accepted by the President's important staff associates.

It's premature to judge how Graham will fit into the picture. As for his credentials for the job, when one former White House Science Adviser from a long-ago Administration was asked by SGR if he considered Graham up to the standard of previous presidential Science Advisers, he replied, "No one has ever been up to the standard of the previous Adviser."—DSG

. . . Earmarking Is an Old Habit, Stevens Points Out

(Continued from page 3)

lars," he said, "or instead whether research dollars should be spent by the Appropriations Committee frankly on the basis of political logrolling." Danforth added that "This process of earmarking research money is strongly oppposed both by the Administration and by the academic and scientific community."

Danforth then noted that Senator Ted Stevens (R-Alaska), who was championing the appropriations, had prepared a list to make the point, as Danforth put it, "that this is nothing new, to earmark some money for specific universities in an appropriation bill." Reading from Stevens' list, Danforth said that such funds had risen from $3 million in 1982 to $137 million last year. "It has become something of a trend," he said, "for university presidents, at least some of them, to come to Congress and to ask us for specific money for research." This was the time to reverse the trend, Danforth argued.

Senator Stevens responded that earmarking research money for specific institutions was an ancient practice that had in recent years benefited the following institutions, according to a list prepared for him by the Congressional Research Service:

Baylor, Boston College, Boston University, USC, Catholic University, College of American Samoa, Columbia University, Florida State, Gallaudet, Hampshire College, Iowa State, Iowa University, MIT, Mississippi State, NYU, North Dakota State, Oregon Health Sciences, Oregon State, Pennsylvania State, Purdue, St. Paul Vocational Technical Institute, Seattle Community Central College, SUNY, Texas Tech, Tufts, UC Davis, UCLA, University of Connecticut, University of the District of Columbia, University of Hawaii, University of Missouri, University of New Hampshire, University of Oregon, University of Rochester, and West Virginia University.

Noting that the funds for these institutions had come out of non-defense appropriations without arousing serious opposition in Congress, Senator Stevens said that "those of you have already gotten money on a non-peer-review basis, I ask you in fairness, why should we not use a non-peer-review basis for defense research money?" Stevens carefully pointed out that his own state was not among the beneficiaries of the bill under consideration, and he added that after this batch got through, the Congress could set a firm rule against any more earmarked items for academic R&D.

The futility of expecting Congress to take the pledge was then addressed by Senator Jeff Bingaman (D New Mexico), who noted that the Appropriations Committee, which had sanctioned the earmarked items, had simultaneously issue a statement barring any more items that hadn't received peer-reviewed approval. "But unfortunately," said Bingaman, "you turn the next page in the Committee's report and there you find the Committee recommending $25 million for a Science and Engineering Center at Arizona State University again without this project being subjected to competitive, merit-based contracting procedures."

10 Blocked from the Trough

These are the schools whose earmarked funds for the current fiscal year were eliminated by the Senate. The table shows the most recently appropriated funds for their projects, in fiscal 1984, and the amounts sought in a supplemental appropriations bill.

	Actual in 1984	Proposed for 1986
Iowa State	$156,000	$6,500,000
U of Nevada, Las Vegas	0	3,500,000
Wichita State	0	5,000,000
U of Kansas	877,000	2,000,000
Northeastern	2,200,000	13,500,000
Oregon Grad Center	7,500,000	1,000,000
Oklahoma State	2,877,000	1,000,000
Syracuse	405,000	12,000,000
Rochester Inst. of Tech	310,000	11,100,000
Arizona State	1,053,000	25,000,000

Senator Jim Sasser (D-Tenn.) denounced the earmarked items as "the effort by some universities in some states to gain financial advantage at the expense of universities in other states." Sasser then attested to the innocent purity of institutions in his home state: "Frankly, when I heard about the effort being made by some of my colleagues to secure university defense research for universities in their states by going around the regular peer-review process, I took it upon myself to call the universities in Tennessee and ask them if there were projects they wanted funded in similar ways. But every university I discussed this with in my state said absolutely not."

To the defense of pork-barreling came Senator Dennis DeConcini (D-Ariz.), who stated that "Over 50 percent of the federal research money goes to 16 states every year . . . . We have a right to compete," said DeConcini, "We cannot compete. I am proud of my Arizona State University and the science and engineering technology center they have proposed, but they have done it without any federal help so far because it all goes to the elite eastern or California high-tech schools. It is time we called a stop to that. We are talking about peer-review. Well, let us make peer review equitable, not just of the elite."

The hour was late, and the Senate was weary, which may account for expressions of puzzlement by Senator

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Foreign Engineers: Dispute Rising on Wages, Entry

The small but growing ranks of non-citizen engineers in the US workforce is becoming a bitter issue in professional engineering societies as an increasing number of members argue that the societies are in collusion with industrial employers seeking relatively cheap help. One of the frankest statements on this topic to come out of a major engineering society was issued recently by the Board on Issues Management of the American Society of Mechanical Engineers (ASME). Following are excerpts.

. . . considering the controversy and emotion surrounding the topic [of foreign engineers], it is not surprising that the ASME and other engineering groups have been cautious in their approach to this issue.

The Committee of Concerned EEs (CCEE), a group of Institute of Electrical and Electronics Engineers members unhappy with the IEEE's treatment of the "working engineer," has been a leader in publicizing abuses under the current immigration law. Headed by Irwin Feerst, an independent consulting engineer, the CCEE has made this issue its focal point and many credit this group's tenacity for IEEE's recent shift in stance on this issue. Mr. Feerst is a long-time critic of the "old-line" engineering societies, and ASME has received its share of condemnation for being a society run "by and for corporate executives and the professors" which fails to see this threat to its members.

Another vocal critic of US immigration policy and its impact on engineering employment is the American Engineering Association (AEA), a group . . . comprised mainly of contract engineers. Testifing [in Congress last year], the AEA accused "the same people who argue for restraints on foreign competition" as being the ones who "are importing foreign engineers as fast as they can process the paperwork" . . . .

There is a perception among some engineers, including ASME members, that companies are circumventing US immigration law by illegally recruiting foreign engineers and paying them less than prevailing wages. There is no hard evidence, however, as to the number of jobs involved. Based on the available information, it is impossible to conclude that this type of hiring is common practice in the US.

Certainly some companies are guilty of abusing the laws that govern the entry of foreign engineers into the United States. The Institute of Electrical and Electronics Engineers has initiated a program to help document the illegal hiring of foreign engineers. An increased awareness among engineers about the potential for abuse in the immigration and labor certification processes as well as more diligent monitoring of suspect hiring practices will go a long way towards protecting the rights of all engineers.

(The ASME Issue Brief, "Foreign Engineers in the United States: Perception and Reality" (5 pages), also includes some of the statistical data available on the subject, as well as analytical text. Copies are available without charge from ASME, Board on Issues Management, 1825 K St. NW, Washington, DC 20006; tel. 202/785-3756.)

Senate

(Continued from page 4)

Russell B. Long (D-La.). "Am I to understand," he asked, "that this is a situation—which is certainly without my knowledge—where the Congress said that we are not going to have any say about who gets this money? Are we going to have some *peers* decide who gets the money? Is that what is involved here?" Long asked, with obvious disbelief.

In response, Sasser recited the presumed virtues of peer review, to which Long replied. "The way it was explained to me by someone from my part of the country is that to get the money by this peer review, it helps to be a peer, one of the group." Long added that "I would rather depend on my colleague on the Appropriations Committee than on one of those peers," and he recalled that the late Senator Robert Kerr of Oklahoma used to say "that he was against any combine he was not in on."

Summing up, Long said that "those universities getting the money have a habit of continuing to get the money, and those who have not been getting the money, seem to have a way of continuing not to get money."

Playing a duet with Long, DeConcini said, "One look at the universities that received the research money shows that beyond a shadow of doubt that unless your university is on the east or west coast, you are picking up the crumbs, . . . anything, of any Federal research dollars."

Deconcini pointed out that "some of our most critical national laboratories and research centers have budgets totaling hundreds of millions of dollars that are not subject to peer review." He then listed big federally financed research centers whose operations are contracted to universities or academic consortiums. "The University of California Lawrence Laboratories, $690 million, the University of California Los Alamos Scientific Lab, $424 million, Caltech Jet Propulsion Lab $554

(Continued on page 6)

Pentagon Plans a Big Think Tank to Advise SDI

Plans for a think tank of its own for the Strategic Defense Initiative—with a staff of 100-200 and a budget of $20-$30 million a year—have received a skeptical review in an analysis prepared for two doubting Democratic Senators by the Library of Congress.

After receiving the analysis, the Senators, William Proxmire, of Wisconsin, and Paul Simon, of Illinois, said they would try to block the Pentagon's plans to launch the Strategic Defense Initiative Institute (SDII). In the aggressive spirit that has generally characterized the Star Wars operation, DOD is planning to finance the venture without Congressional approval by reprogramming already appropriated funds.

The Library's review conveys the impression that the proposed SDII has been designed from the start to serve as cheerleader for SDI, rather than in the idealized think-tank role of brotherly but independent critic. The Administration's hardline strategic zealots have seen to it that few of these true-floating research centers actually remain aloof and independent, nonetheless, some pretenses are maintained. But not so in the case of SDI's proposed Institute.

The analysis, prepared in the Science Policy Research Division of the Library's Congressional Research Service, notes that "it is *not* (original italics) DOD's intention to establish any organization that is unsympathetic to the vision behind SDI; rather it is DOD's intention to establish an organization that is unbiased in its evaluation of which technologies and system concepts are best suited to meet SDI objectives."

The Pentagon hasn't identified the promoters of the SDI Institute, but SGR understands that the key figures are Edward Teller, who led the sales team that sold SDI to the White House in 1983, and Simon Ramo, a founder of TRW Inc., who has served as an adviser to the Reagan Administration. The contract for the Institute is to be awarded without competition, the analysis states.

The authors of the analysis, Cosmo DiMaggio and Michael E. Davey, express doubt in their report that the Institute would be able "to acquire all of the top personnel required to adequately perform all of the stated functions." They coupled that concern with speculation that the institute, even with inadequate staffing, might "exert undue influence over program policy decisions."

The Defense Department says it plans to locate the Institute in the Washington, DC, area and have it in operation by September 30. Senator Proxmire, a member of Appropriations Committee, says he plans to block any expenditure of funds for a Star Wars think tank. With the Gramm-Rudman spirit raging on Capitol Hill, this is a poor time for new ventures

Senate

(Continued from page 5)

million; Stanford Linear Accelerator Laboratory, $117 million, MIT Lincoln Laboratory, $255 million, Princeton Plasma Physics Laboratory, $132 million, and Brookhaven National Laboratory, $173 million.

"I feel like a real piker here tonight," DeConcini said, "because I'm asking for $25 million . . . for a center at Arizona State University."

The debate was then joined by Senator Lowell P. Weicker Jr. (R-Conn.), who, lovingly presiding over the NIH budget, routinely chastises the NIH management for not seeking more money. Acknowledging the value of peer review, Weicker said that peer review should not be enthroned as the ultimate device for distributing federal research money. If it is, he said, "then there is not much point in having an Appropriations Committee or indeed to act as a US Senator."

Weicker added that "considering the status of priorities in this nation, nothing delights me more than when every one of you interest yourself in a university or in a cancer center. The priorities are so out of whack. I mean this fellow controls almost all the money in the budget for defense and it is hard to get anybody excited about the business of life, whether it is knowledge, science, or whatever."

The arguments went back and forth for another 20 minutes. When the vote was taken, the earmarked projects were eliminated by a comfortable margin of 18 votes. The projects, however, are down but not out. They survive in the House version of the bill, and therefore might be there when a final bill is enacted. But the Senate debate and vote demonstrated the power that the well-heeled institutions can mobilize to keep their privileged place in the distribution of federal research funds.

The dosage of hypocritical *chutzpah* that they brought to the issue is astonishing. Defense Secretary Weinberger's adulation of competition and peer review comes just as he is setting up a major think tank for the Strategic Defense Initiative—on a non-competitive basis (See Box). And where are peer review and competition in the $86 million that the National Academy of Sciences is receiving this year from federal agencies for studies of one sort or another?

Lawmakers' Pet Projects Add $19.9-Million to Cost of Extending College-Aid Programs

They range from $250,000 each for 4 institutions to $6.2-million for Bethune Cookman

By ROBIN WILSON

WASHINGTON

Pressure to reduce the federal deficit forced House and Senate negotiators to hold down the overall price tag of legislation to extend student aid and other college programs in the Higher Education Act of 1965. But when it came to bringing home the bacon for their constituents, lawmakers managed to lard the bill with millions of dollars for colleges in their districts.

Consider: The original bill approved by the House included $9.3-million for nine special campus projects, the Senate passed a measure without any. By the time negotiators had agreed to a final compromise, the bill had $19.9-million for 13 projects.

The projects in the compromise bill—which is now pending in the House and Senate—range from $250,000 grants to four colleges to $6.2-million to help construct a fine-arts complex at Bethune Cookman College.

House Members Called 'Piggish'

The issue of earmarking money for special projects was one of the most contentious that members of the conference committee had to consider. Senate aides called House members "piggish" for putting special projects in the bill. Representatives chided Senators for criticizing the House projects while attaching their own pet projects to other pieces of legislation.

Higher-education lobbyists also got into the debate, complaining that it was unfair to earmark money for colleges simply because they happen to be in the districts of influential members of Congress. They argued that colleges should submit proposals for using the money and a peer-review panel should decide which proposals are best.

They got some support among the lawmakers—mainly those who had been left out of the spoils.

On the final day of the conference con-

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THE HIGHER-EDUCATION PORK BARREL

Special Campus Projects Proposed by House Conferees

- $250,000 for each of four programs to reduce the high-school dropout rate, to Compton Community College, Metropolitan Community College, Community College of Vermont, and Wayne County Community College (proposed by Rep. Mervyn M. Dymally, Democrat of California, benefiting colleges in his own state and the states of fellow conferees Rep. E. Thomas Coleman, Republican of Missouri, Rep. James M. Jeffords, Republican of Vermont; and Rep. William D. Ford, Democrat of Michigan).
- $2-million for the renovation of a building at Eastern Michigan University (supported by Representative Ford).
- $2-million for a program to instruct gifted and talented high-school students at the University of Lowell (by Rep. Chester G. Atkins, Democrat of Massachusetts).
- $2-million to help establish the Wagner Institute of Urban Public Policy at the City University of New York (by Rep. Mario Biaggi, Democrat of New York).
- $550,000 for the renovation of a dormitory at Shaw University (by Representative Dymally, who is interested in the historically black college even though it is not in his state).
- $1.8-million for the construction of a health-education facility at Rochester Institute of Technology (on behalf of Rep. Silvio O. Conte, Democrat of Massachusetts, who is interested in the institute even though it is not in his state).

Special Campus Projects Proposed by Senate Conferees

- $6.2-million to help construct a fine-arts complex at Bethune Cookman College (supported by Sen. Paula Hawkins, Republican of Florida).
- $2.7-million to help Boston College repay money it borrowed to build a library named after House Speaker Thomas P. (Tip) O'Neill, Jr. (by Sen. Edward M. Kennedy, Democrat of Massachusetts).
- $1.5-million for a bio-behavioral research facility at the University of Connecticut at Storrs (by Sen. Christopher J. Dodd, Democrat of Connecticut).
- $300,000 to help establish a doctoral program in business administration at the University of Rhode Island (by Sen. Claiborne Pell, Democrat of Rhode Island).

Is Anybody Listening? Aspirants to Fla. Education Post Woo Voters

By CAROLYN J. MOONEY

TALLAHASSEE, FLA.

It's not easy getting Floridians fired up over who should be elected the state's next education commissioner in November.

With so much attention focused on drug dealers, immigration, spectacular population growth, and a U.S. Senate race that has captured the national spotlight all year, most Floridians aren't exactly talking about the education commissioner's campaign in the supermarket.

But they should be, say three candidates seeking the cabinet-level job. In the next few weeks, the three—a state senator, a former university president, and a schoolteacher—will be campaigning harder than ever to convince voters that education is crucial to Florida's future.

The Republican nominee will be determined in a runoff next week between two of the candidates.

Teaching in All 67 Counties

Like any politicians, the candidates have relied heavily on creative campaigning to take their message from the state capital here near the Georgia border to the ribbon of highway that stretches across the Florida keys hundreds of miles to the south.

One candidate has vowed to teach in a public school or college in each of Florida's 67 counties (all of last week, she had made it to 51). Another candidate draped huge banners across two old school buses and organized volunteers to drive them up and down Florida's coastlines. A handicapped state representative who was eliminated in the Democratic primary earlier this month rolled his wheelchair from one end of the state to the other, logging more than 1,000 miles and plenty of media attention.

"How you get people fired up,' says Stan Marshall, one of the two Republican candidates, "is to start talking about the quality of the schools and the better life we could all be leading."

Says State Sen. Betty Castor, the Democratic candidate and front runner: "I think the largest constituency in the state is for

Continued on Following Page

requirements in the Gramm-Rudman-Hollings deficit-reduction law.

Bruce M. Carnes, Deputy Under Secretary of Education, said the Administration had proposed to cut student-aid programs because "their importance was outweighed" by the need for drug education.

Money for Colleges in House Bill

While nearly all of the money in the President's package would go to schools, about $35-million of the $350-million approved by the House would go to colleges to develop programs for instructing schoolteachers and community leaders in drug-abuse prevention. Colleges and unigan proposal for people caught selling or manufacturing drugs near campuses.

College officials said last week that the increased penalties could help the enforcement efforts, but they said campus security officers were already doing their best to keep drugs away from campuses.

"Most universities and colleges are on top of the problem," said Charles E. Lamb, director of public safety at Georgetown University. "Probably in the past 10 years we've done better than cities, towns, and states because we are closer-knit communities. We know what's going on on campus." —ROBIN WILSON

Pet Projects Add $19.9-Million to Cost of Extending College-Aid Programs

Continued from Page 19

mittee's meetings. Rep. Steve Gunderson, Republican of Wisconsin, said there should be a nationwide competition for the funds, and warned the negotiators they would "send the signal that all of us can offer a project from now on and we're going to get it in."

Mr. Gunderson called for a roll-call vote on the projects, an unusual occurrence during debate by a conference committee, even though he knew he would lose. There were, after all, pet projects included for the states of both the Democrat and Republican leaders of the House Post-secondary Education Subcommittee.

He was right. The House conferees voted 16 to 4 for the projects; Senate negotiators did not take a public vote.

Many of the other negotiators spent their time persuading each other that adding money for the projects was a good idea.

"Many of these programs are completely consistent with the thrust of the legislation," said Sen. Edward M. Kennedy, Democrat of Massachusetts. Indeed, he made approval of the projects one of his top priorities. Before the conference committee considered the special projects, Senator Kennedy had participated in debate on only one other program during 11 days of negotiations—a pilot project to provide child care for low-income students.

But he then showed up two days in a row to try to persuade his colleagues to approve money for a library at Boston College, to be named after retiring House Speaker Thomas P. (Tip) O'Neill, Jr., and for a telecommunications network that would be developed by the University of Massachusetts and Boston University and serve other Massachusetts institutions.

Mr. Kennedy acknowledged that the special projects in the legislation "allegedly have a bad name" because they are in the home states and Congressional districts of the negotiators. "But they are very effective projects," he said.

The conferees eventually told Senator Kennedy he could only have one. As of last week, he was leaning toward the Boston College project.

Rep. William D. Ford, the Michigan Democrat whose state would be home to two of the special projects, said the higher-education bill was precisely where they belonged.

A Favor for Rep. Conte

"This is really what this committee ought to be doing but it can't," he said. That's because authorizing committees—like the ones writing the Higher Education Act extension—can permit spending on particular projects but it is the Congressional appropriations committees that actually dole out the money. As a result, Appropriations Committee members often end up allocating money for their own special projects that haven't been approved by the authorizing committees. "They get to pass out the pork," complained Mr. Ford.

The negotiators have the word of Appropriations Committee members that money will be included next year for their special projects—assuming the bill is signed into law. But they didn't earn that assurance without returning a favor: Their bill includes money for a health-education facility at Rochester Institute of Technology, which happens to be of special interest to Rep. Silvo O. Conte of Massachusetts, the ranking Republican member of the House Appropriations Committee—even though it's not located in his state.

"Nobody wants Mr. Conte to be upset, because he has a lot of power," explained a Congressional aide

	eligible to receive at least $200.
General Eligibility for Student Aid	Recipients must maintain "satisfactory" academic progress, as determined by campus officials.
Institutional Aid	$220-million is authorized to improve academic quality and institutional management at developing institutions, with 30 per cent earmarked for community colleges and at least $27-million for historically black colleges. An additional $50-million is authorized for grants to help colleges build endowments.
Graduate Education	Grants are provided to universities to improve graduate programs. Fellowships are provided to low-income minority students and to students in the humanities and social sciences. Grants are authorized for projects to counsel and train disadvantaged students who plan to apply to law schools and for clinical programs for law students.
Teacher Training	Scholarships are authorized for high-school students who promise to enter teaching. Stipends are authorized for outstanding teachers who take sabbaticals to work on projects that upgrade their professional skills.
Adult and Continuing Education	Grants are authorized to states to finance innovative projects for adult students. National Advisory Council on Continuing Education oversees projects related to adult education.
Facilities	Grants and low-interest loans are authorized for construction and renovation of academic facilities.
Community Development	Grants are authorized for urban universities to help solve the problems of the areas in which their campuses are located
Miscellany	No equivalent provisions.
Cost	$8.6-billion appropriated for fiscal 1986.

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APPROPRIATIONS ENACTED FOR SPECIFIC COLLEGES AND UNIVERSITIES BY THE 96TH THROUGH THE 99TH CONGRESSES

Susan H. Boren
Specialist in Education
Education and Public Welfare Division
January 14, 1987

ABSTRACT

Colleges and universities generally apply to Federal agencies to receive funding through grants and contracts for construction, research and development. However, a number of institutions of higher education have been specifically designated to receive Federal funds through appropriations laws. This report provides a listing and specific citation for each individual college and university, the appropriations act providing funding, the amount of funding and the specific purpose of funding given to each institution, from the 96th Congress through the 99th Congress.

CONTENTS

APPROPRIATIONS ENACTED FOR SPECIFIC COLLEGES AND UNIVERSITIES
BY THE 96TH THROUGH THE 99TH CONGRESSES

This paper includes information on institutions of higher education that have been specifically designated to receive Federal funds in the form of either grants or loans through annual appropriations acts, including all regular appropriations bills, supplemental appropriations acts, and continuing appropriations resolutions that were enacted during the 96th through the 99th Congresses.

The paper contains a list of the specific universities that received direct appropriations, the public law which appropriated the funding, or reference to the House or Senate report, and the amount of funding appropriated. Given the complex nature of identifying specific college and university appropriations, the resulting list should not be considered exhaustive.

APPROPRIATIONS TO SPECIFIC UNIVERSITIES AND COLLEGES

Generally, colleges and universities apply directly to Federal agencies for grants and contracts for construction, facilities improvement, and research and development (primarily science and technology-related research). These are awarded on a competitive basis through applications made and approved under formal guidelines and regulations, which implement specific Federal statutes. However, a number of colleges and universities have pursued funding outside of the usual application and award procedures by attempting to obtain a specific appropriation for their own individual institution.

The listings on the following pages are a result of computerized and manual searches through appropriations bills acted on in the 96th through the 99th Congresses, accompanying House and Senate reports, conference reports and final public laws. Part of this research effort relied on a computerized legislative-information data base maintained by CRS. 1/ Nevertheless, the resulting list from these various efforts should not be considered definitive. Given the size of this research effort, the multitude of bills and reports to be considered, and the various ways in which these specific appropriations are specified in these sources, there may be relevant provisions not yet identified. The computerized list has included such institutions as Gallaudet and Howard University that have a special relationship to the Federal Government and that have traditionally received and relied upon Federal appropriations for their operating

1/ The major data base search was provided by Marsha [illegible]ny, Library Services Division, Congressional Research Service.

budgets. In addition, the computerized data base does not distinguish between those institutions that received specific appropriations through a peer review process, those that had no peer review, and those institutions that may be receiving a continuation contract or grant which initially did undergo peer review.

It should be noted that the computerized search provided several specific authorizations of appropriations for institutions in authorization bills. Although our computer search covered the 96th through the 99th Congresses, only those authorization bills in the 99th Congress were found by the computer. References to authorization bills are listed in the Appendix.

As the following lists delineate, some universities have been successful in their attempts to receive direct appropriations. In the 96th Congress approximately 12 institutions received specific appropriations. In the 97th Congress, the number of institutions receiving specific appropriations increased to over 20. In the 98th Congress the number of institutions receiving specific appropriations increased to 40, and by the 99th Congress 60 institutions received specific appropriations (with an additional 20 colleges specified in authorizations).

The following lists for the 96th through the 99th Congresses provide a description of the legislation containing language for specific colleges, delineate the specific college or university named, and provide the specific funding level. There is, in addition, a quick reference summary table prepared for each Congress with the institutions placed in alphabetical order. Included in the lists are those institutions selected through the data base search whether or not a specific dollar amount is shown for each institution. Also included are bills for which funding was provided through a continuing appropriations resolution.

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Listing of Colleges and Universities that Received Specific Appropriations in the 96th Congress

College/University	Amount	Law
Baylor College of Medicine	$1,000,000	P.L. 96-108, Agriculture appropriations, FY80
Gallaudat College	$43,341,000	P.L. 96-123, Continuing appropriations, FY80 (H.R. 4389, Labor, Health, Education and Welfare appropriations, FY80)
	$49,768,000	P.L. 96-536, Continuing appropriations, FY81 (H.R. 7998, Labor, Health, and Human Services appropriations, FY81)
Howard University	$121,893,000	P.L. 96-123, Continuing appropriations, FY80 (H.R. 4389, Labor, Health, Education and Welfare appropriations, FY80)
	$133,983,000	P.L. 96-536, Continuing appropriations, FY81) (H.R. 7998, Labor, Health, and Human Services appropriations, FY81)
Navajo Community College	$900,000	P.L. 96-126, Interior appropriations, FY80
Ohio State University	$5,500,000	P.L. 96-108 Continuing appropriations, FY80 (H.R. 4389, Labor, Health, Education and Welfare appropriations, FY80)

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Listing of Colleges and Universities that Received Specific Appropriations in the 96th Congress--Continued

College/University	Amount	Law
Pennsylvania State University	$1,000,000	P.L. 96-108, Continuing appropriations, FY80 (H.R. 4389, Labor, Health, Education and Welfare appropriations, FY80)
Texas Tech University	$200,000	P.L. 96-108, Agriculture appropriations, FY80
Tufts University	$2,000,000	P.L. 96-108, Agriculture appropriations, FY80
Tuskegee Institute and 1890 colleges	$10,453,000	P.L. 96-108, Agriculture appropriations, FY80
	$17,785,000	P.L. 96-108, Agriculture appropriations, FY80
	$11,250,000	P.L. 96-528, Agriculture appropriations, FY81
	$19,270,000	P.L. 96-528, Agriculture appropriations, FY81
University of Alaska	$290,000	P.L. 96-108, Agriculture appropriations, FY80
University of Arkansas	$750,000	P.L. 96-108, Agriculture appropriations, FY80
University of the District of Columbia	$47,611,600	P.L. 96-93, District of Columbia appropriations, FY80
	$333,800	P.L. 96-304, Supplemental appropriations, FY80
	$60,266,600	P.L. 96-530, District of Columbia appropriations, FY81

INDIVIDUAL COLLEGES AND UNIVERSITIES THAT RECEIVED SPECIFIC APPROPRIATIONS IN THE 96TH CONGRESS (FIRST SESSION) 2/

P.L. 96-93--District of Columbia Appropriations, 1980 (H.R. 4580)

. . . allocates $47,611,600 for the University of the District of Columbia instead of $47,115,200 as proposed by the House and $48,011,600 as proposed by the Senate.
(p. 11, H. Rept. 96-443 (conf.))

P.L. 96-108--Agriculture, Rural Development and Related Agencies Appropriations, 1980 (H.R. 4387)

Agricultural Research:

$2,000,000 . . . for the operation of USDA Human Nutrition Center at Tufts University . . . $1,000,000 for Baylor College of Medicine (Child Nutrition Lab).
(Congressional Record (bound), October 31, 1979, p. 30279 quoting H. Rept. 96-553 (conf.))

Cooperative Research:

. . . $17,785,000 for payments to the 1890 Colleges and Tuskegee Institute.

Extension Activities:

. . . $10,453,000 for grants to the 1890 colleges and Tuskegee Institute.
(p. 38, S. Rept. 96-246)

2/ In most instances the quotations given for each public law are from the House or Senate report, or corresponding descriptions from the Congressional Record print of such report. Where no specific citation to a report or Congressional Record reference is given, the quotation is from the public law.

P.L. 96-108--Agriculture, Rural Development and Related Agencies Appropriations, 1980 (H.R. 4387) (cont'd)

Special Grants:

. . . $290,000 for a special research grant to University of Alaska for research on soil and water conservation issues.
(Congressional Record (bound), October 24, 1979, p. 29460, quoting H. Rept. 96-553 (conf.))

. . . $750,000 for the establishment of a regional small farm research unit . . . to be operated in cooperation with the University of Arkansas.
(p. 38, H. Rept. 96-242) (Congressional Record (bound) October 31, 1979, p. 30279, quoting conference report, H. Rept. 96-553)

. . . $200,000 for FY80 for research on land stress and soil moisture conservation at Texas Tech University.
(p. 38, H. Rept. 96-242) (Congressional Record (bound) October 24, 1979, p. 29459, quoting conference report, H. Rept. 96-553)

P.L. 96-123--Continuing Appropriations, 1980 (H.J. Res. 440)

This act provided authority for funding of the following programs and departments:

H.R. 4389--Department of Labor, Health, Education and Welfare Appropriations, 1980

. . . $4,300,000 requested in the budget and included in the bill for health teaching facilities is required for payment of interest subsidies on construction loans to five health professions schools--(specific school names not mentioned).
(p. 61, H. Rept. 96-244)

. . . $43,341,000 for Gallaudet.

. . . $121,893,000 for Howard University.
(p. 97-98, H. Rept. 96-244) (p. 140, S. Rept. 96-247)

Health Resources Administration:

. . . $1,000,000 for a Health Professions Teaching facility grant for the Pennsylvania State University School of Medicine.
(p. 78, S. Rept. 96-247)

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Occupational, Vocational, and Adult Education--Programs of National Significance:

. . . the Committee directs that at least $5,500,000 be allocated to the National Center for Vocational Education Research at Ohio State University.
(p. 114, S. Rept. 96-247)

P.L. 96-126--Department of Interior Appropriations, 1980 (H.R. 4930)

. . . $900,000 for the Navajo Community College.
(p. 38, H. Rept. 96-374)

INDIVIDUAL COLLEGES AND UNIVERSITIES THAT RECEIVED SPECIFIC APPROPRIATIONS IN THE 96TH CONGRESS (SECOND SESSION)

P.L. 96-304--Supplemental Appropriations and Rescissions, 1980 (H.R. 7542)

. . . the sum of $333,800 is recommended to cover increased fuel costs at the University of the District of Columbia.
(p. 25, H. Rept. 96-1149 (conf.))

P.L. 96-528--Department of Agriculture, 1981 (H.R. 7591)

Extension Activities:

. . . earmarks $11,250,000 for the 1890 land-grant colleges including Tuskegee Institute instead of $10,898,000 as provided by the House and $11,600,000 as provided by the Senate.
(p. 13, H. Rept. 96-1519 (conf.))

. . . earmarks $19,270,000 for payments to 1890 land-grant colleges including Tuskegee for research instead of $18,543,000 as provided by the House and $20 million as provided by the Senate.
(p. 13, H. Rept. 96-1519 (conf.))

P.L. 96-530--District of Columbia Appropriations, 1981 (H.R. 8061)

. . . $60,266,600 for the University of the District of Columbia
(H. Rept. 96-1477 (conf.))

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P.L. 96-536--Continuing Appropriations, 1981
(H.J. Res. 644)

The Continuing Appropriations, 1981 contains funding for Labor, Health and Human Sarvices and Education Appropriations, 1981.

H.R. 7998--Labor, Health and Human Services and Education Appropriations, 1981

. . . $49,768,000 . . . Gallaudet.

. . . $133,98_,000 . . . Howard University.
(p. 110, H. Rept. 96-1244)

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Listing of Colleges and Universities that Received Specific Apppropriations in the 97th Congress
(s = shared with other institutions)

College/University	Amount	Law
American University of Beirut	$10,000,000	P.L. 97-257, Supplemental appropriations, FY82
Baylor	deferred fund	P.L. 97-103, Agriculture appropriations, FY82
Cornell	$148,000 (s)	P.L. 97-103, Agriculture appropriations, FY82
Gallaudet College	$52,000,000	P.L. 97-51, Continuing appropriations, FY82 (H.R. 4560, Labor, Health, and Human Services appropriations, FY82)
	$2,080,000	P.L. 97-257, Supplemental appropriations, FY82
	$52,000,000	P.L. 97-377, Continuing appropriations, FY83
Howard University	$145,200,000	P.L. 97-51, Continuing appropriations, FY82 (H.R. 4560, Labor, Health, and Human Services appropriations, FY82)
	$5,808,000	P.L. 97-257, Supplemental appropriations, FY82
	$145,200,000	P.L. 97-377, Continuing appropriations, FY83
Morehouse Medical College	$5,000,000	P.L. 97-275, Continuing appropriations, FY82 (H.R. 7205, Labor, Health, and Human Services appropriations, FY83)
Mississippi State University	$200,000	P.L. 97-103, Agriculture appropriations, FY82

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Listing of Colleges and Universities that Received Specific Appropriations in the 97th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Navajo Community College	$4,000,000	P.L. 97-100, Interior appropriations, FY82
North Dakota State University	$148,000 (s)	P.L. 97-103, Agriculture appropriations, FY82
Oregon State University	language only	P.L. 97-103, Agriculture appropriations, FY82
	language only	P.L. 97-257, Agriculture appropriations, FY82
	$1,800,000	P.L. 97-370, Agriculture appropriations, FY83
Pennsylvania State University	no $ amount	P.L. 97-394, Interior appropriations, FY83
	$9,600,000 (s)	P.L. 97-394, Interior appropriations, FY83
Rochester Institute of Technology	$1,052,000	P.L. 97-257, Supplemental appropriations, FY82
South Dakota State University	$148,000 (s)	P.L. 97-103, Agriculture appropriations, FY82
Southern Illinois University	$1,000,000	P.L. 97-100, Interior appropriations, FY82
	$1,500,000	P.L. 97-394, Interior appropriations, FY83
Texas Tech University	deferred funds	P.L. 97-103, Agriculture appropriations, FY82
Tufts University	$5,896,000	P.L. 97-103, Agriculture appropriations, FY82
	$9,000,000	P.L. 97-370, Agriculture appropriations, FY83

CRS-15

Listing of Colleges and Universities that Received Specific Appropriations in the 97th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Tuskegee Institute (including other land-grant colleges)	$9,000,000	P.L. 97-275, Continuing appropriations, FY83 (H.R. 7205, Health and Human Services appropriations, FY83)
	$21,492,000	P.L. 97-103, Agriculture appropriations, FY82
	$12,241,000	P.L. 97-103, Agriculture appropriations, FY82
	$22,394,000	P.L. 97-370, Agriculture appropriations, FY83
University of the District of Columbia	$48,937,000	P.L. 97-91, District of Columbia appropriations, FY82
	$381,300	P.L. 97-91, District of Columbia appropriations, FY82
	$58,342,400	P.L. 97-370, Agriculture appropriations, FY82
	$58,342,000	P.L. 97-378, District of Columbia appropriations, FY83
University of Florida	$775,000 (s)	P.L. 97-103, Agriculture appropriations, FY82
University of Hawaii	$775,000 (s)	P.L. 97-103, Agriculture appropriations, FY82
University of North Dakota	no $ amount	P.L. 97-394, Interior appropriations, FY83

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Listing of Colleges and Universities that Received Specific Appropriations in the 97th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
University of Oklahoma	$2,000,000	P.L. 97-377, Further Continuing appropriations, FY83
	$3,000,000	P.L. 97-275, Continuing appropriations, FY83 (H.R. 7205, Labor, Health, and Human Services appropriations, FY83)
University of Rochester	$6,100,000	P.L. 97-275, Continuing appropriations, FY83 (H.R. 7145, Energy appropriations, FY83)
University of Wyoming	no $ amount	P.L. 97-394, Interior appropriations, FY83
Virginia Polytechnic Institute	deferred funds	P.L. 97-103, Agriculture appropriations, FY82
West Virginia University	$9,600,000 (s)	P.L. 97-394, Interior appropriations, FY83

INDIVIDUAL COLLEGES AND UNIVERSITIES THAT RECEIVED SPECIFIC APPROPRIATIONS IN THE 97TH CONGRESS (FIRST SESSION)

P.L. 97-51--Continuing Appropriations, 1982 (H.J. Res. 325)

P.L. 97-51 provides funding authority for the following programs and departments:

H.R. 4560--Department of Labor, Health and Human Services and Education and Related Agencies Appropriations, 1982

. . . Howard University . . . $145,200,000.

. . . Gallaudet College . . . $52,000,000.
(p. 112, H. Rept. 97-251) (p. 144, S. Rept. 97-268)

P.L. 97-91--District of Columbia Appropriations, 1982 (H.R. 4522)

Public Education System:

. . . $48,937,000 for the operation of the University of the District of Columbia . . . .
(p. 45, H. Rept. 97-235)

Public Building Construction:

. . . $381,300 to the University of the District of Columbia to renovate bridges and corridors . . . at the Van Ness campus.
(p. 61, H. Rept. 97-235) (p. 32, S. Rept. 97-254)

P.L. 97-100--Department of Interior Appropriations, 1982 (H.R. 4035)

Mining Research and Development:

. . . The Committee has learned of discussions between the Department of Energy and Southern Illinois University regarding the possibility of SIU operating DOE's Carbondale Mining Technology Center at Carbondale . . . The committee has made available $1,000,000 to complete such negotiations.
(p. 62, S. Rept. 97-166) (p. 27, H. Rept. 97-315 (conf.))

Bureau of Indian Affairs:

. . . $4,000,000 shall be available for grants to the Navajo Community College.
(p. 17, H. Rept. 97-315 (conf.))

P.L. 97-103--Department of Agriculture, Rural Development and Related Agencies, 1982 (H.R. 4119)

Buildings and Facilities:

. . . defer funding increases for . . . Children's Nutrition Research Center at Baylor College, Plant Stress and Water Conservation Research Laboratory at Texas Tech University; and the Regional Veterinary School and Virginia Polytechnic Institute.
(p. 42 H. Rept. 97-172)

Tropical/Subtropical Research:

. . . $775,000 to be allocated equally between land-grant universities in Hawaii and Florida.
(p. 18, S. Rept. 97-248)

Beef Forage Research:

. . . $200,000 to Mississippi State University and an additional $300,000 to more adequately complement the State's contributions.
(p. 19, S. Rept. 97-248)

Buildings and Facilities:

. . . $5,896,000 to complete construction of the Human Nutrition Center at Tufts University as proposed by the House.
(p. 9, H. Rept. 97-313 (conf.))

P.L. 97-103--Department of Agriculture, Rural Development and Related Agencies, 1982 (H.R. 4119) (cont'd)

Cooperative State Research Service:

. . . earmarks $21,492,000 for payments to the 1890 land grant colleges including Tuskegee Institute for research instead of $21,992,000 as proposed by the House and $20,992,000 as proposed by the Senate. (p. 10, H. Rept. 97-313 (conf.))

Grasshopper Fungus:

. . . $148,000 for research on the disease at North and South Dakota State and Cornell Universities.
(p. 8, H. Rept. 97-313 (conf.))

Agricultural Research Center:

. . . Oregon State University in cooperation with private energy and biomass consultants has developed a proposal for a feasibility study on the use of agricultural residues and forest slash as fuel sources for . . . electrical power plant . . . budgetary constraints do not permit additional funding for this project.
(p. 9, H. Rept. 97-313 (conf.))

Extension Service:

. . . $12,241,000 for 1890 land-grant colleges including Tuskegee.
(p. 9, H. Rept. 97-313 (conf.))

INDIVIDUAL COLLEGES AND UNIVERSITIES THAT RECEIVED SPECIFIC APPROPRIATIONS IN THE 97TH CONGRESS (SECOND SESSION)

P.L. 97-257--Making Supplemental Appropriations, 1982 (H.R. 6863)

. . . Oregon State University Biomass Project . . . the conferees urge the Department to give careful consideration to this worthwhile proposal . . . . (no specific appropriation included).
(p. 8, H. Rept. 97-747 (conf.))

. . . that of the amounts that shall remain available for obligations under part B of Title III of the Higher Education Act $300,000 shall be for two institutions of higher learning in Vermont under part A of Title III . . . (institution names not given).
(p. 38, H. Rept. 97-747 (conf.))

International Disaster Assistance:

. . . The Committee is recommendating an earmark of $10 million to help defray costs to the American University of Beirut associated with this crisis (referring to the fighting in Beirut, Lebanon.)
(p. 88, S. Rept. 97-516)

. . . the Committee recommends an additional $2,080,000 for Gallaudet the same as the House allowance.
(p. 134, S. Rept. 97-516)

. . . The committee recommends a supplemental appropriation of $5,808,000 for Howard University.
(p. 140, S. Rept. 97-516)

. . . The Committee recommends a supplemental appropriation of $1,052,000 . . . to maintain services . . . at a national residential education and research center located . . . at Rochester Institute of Technology.
(p. 140, S. Rept. 97-516.)

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P.L. 97-275--Continuing Appropriations, 1983 (H.J. Res. 599)

Funding is provided for the following:

H.R. 7205--Department of Labor, Health and Human Services, and Education and Related Agencies Appropriations, 1983

Health Resources Administration:

. . . $5,000,000 in construction grant support to Morehouse Medical College in Atlanta, Georgia.
(p. 67, H. Rept. 97-894)

Special Endowments:

. . . The committee recommendation includes $3,000,000 for the Carl Albert Congressional Research and Studies Center at the University of Oklahoma.

. . . $9,000,000 to establish a Memorial Education Center at Tuskegee Institute in honor of General Daniel Chappie James . . . .
(p. 114, H. Rept. 97-894)

. . . $52,000,000 . . . Gallaudet.

. . . $145,200,000 . . . Howard University.
(p. 120, H. Rept. 97-894)

H.R. 7145--Department of Energy and Water Appropriations, 1983

Inertial Confinement Fusion:

. . . $6,100,000 for the program at the University of Rochester.
(p. 60, H. Rept. 97-850.)

P.L. 97-370--Agriculture, Rural Development and Related Agencies Appropriations, FY 1983 (H.R. 7072)

. . . $9,000,000 is available for the Human Nutrition Center at Tufts University.
(p. 8, H. Rept. 97-957)

. . . The Committee recommends $22,394,000 for payments to the 1890 Colleges and Tuskegee Institute.
(p. 18, H. Rept. 97-957)

P.L. 97-370--Agriculture, Rural Development and Related Agencies Appropriations, FY 1983 (H.R. 7072)

. . . $1,800,000 for a feasibility study on the use of agriculture residues and forest slash as fuel resources for a combined cycle closed electrical power plant at Oregon State University.
(P.L. 97-370)

P.L. 97-377--Further Continuing Appropriations, FY 1983 (H.J. Res. 631)

. . . $2,000,000 shall be available until expended for the Carl Albert Congressional Research and Studies Center (University of Oklahoma).
(p. 71, H. Rept. 97-980)

. . . Gallaudet . . . $52,000,000.

. . . Howard University . . . $145,200,000.
(p. 71, H. Rept. 97-980)

P.L. 97-378--District of Columbia Appropriations, 1983 (H.R. 7114)

Allocation of Public Education Appropriations:

. . . University of the District of Columbia . . . $58,342,400.
(p. 8, H. Rept. 97-972)

P.L. 97-394--Department of Interior Appropriations, FY 1983 (H.R. 7356)

Bureau of Mines:

. . . $9,600,000 for mineral institutes . . . existing facilities Pennsylvania State and West Virginia Universities are particularly suited for research on control of dust particle generation.
(p. 17, H. Rept. 97-978 (conf.))

. . . allow the Secretary of Energy to enter into agreements with the University of Wyoming to transfer the Laramie Energy Technology Center to the University and with University of North Dakota to transfer the Grand Forks Energy Technology Center to the University (no mention of dollar amounts).
(p. 37, H. Rept. 97-978 (conf.))

P.L. 97-394—Department of Interior Appropriations, FY 1983 (H.R. 7356)

Bureau of Mines:

. . . The Bureau shall cooperate with the Penn State and West Virginia Universities in a program to conduct research on black lung disease within the additional amount made available for Health and Safety Technology . . . . (no specific dollar amount mentioned).
(p. 42, H. Rept. 97-942)

Forest Service—Department of Agriculture

Gypsy Moth Research:

. . . The Committee is aware of one such proposal for Penn State University. The Committee suggests that the Department solicit additional proposals from the research community (no specific dollar amount; implies the desire to have a competition for this research dollar).
(p. 73, H. Rept. 97-942)

Fossil Energy Research and Development:

. . . the Department shall, within available resources support activities associated with the lease of the Center (Carbondale Mining Technology Center) by the University (Southern Illinois University) at a level no less than $1,500,000 during FY83.
(p. 94, H. Rept. 97-942.)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress
(s = shared with other institutions)

College/University	Amount	Law
Baylor College of Medicine	$300,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
Boston College	$7,500,000	P.L. 98-63, Supplemental appropriations, FY83
Boston University	$19,000,000	P.L. 98-396, Supplemental appropriations, FY84
California South University	$5,000,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
Catholic University	$5,000,000	P.L. 98-50, Energy appropriations, FY85
	$9,200,000	P.L. 98-360, Energy appropriations, FY85
College of American Samoa	$3,000,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
College of Micronesia	$3,000,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services, FY85)
Columbia University	$5,000,000	P.L. 98-50, Energy appropriations, FY84
	$3,000,000	P.L. 98-360, Energy appropriations, FY85

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Briefing Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress—Continued
(a = shared with other institutions)

College/University	Amount	Law
Delgado College	$5,000,000 (a)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services, FY85)
Floride State University	$7,000,000	P.L. 98-360, Energy appropriations, FY85
Gallaudet College	$52,000,000	P.L. 98-139, Labor, Health, and Human Services appropriations, FY84)
	$2,000,000	P.L. 98-396, Supplemental appropriations, FY84
	$58,600,000	P.L. 98-473, Continuing appropriations, FY8 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
Georgetown University	$820,000	P.L. 98-212, Defense appropriations
Hampshire College	$45,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)
Howard University	$145,200,000	P.L. 98-139, Labor, Health, and Human Services appropriations, FY84)
	$11,000,000	P.L. 98-396, Supplemental appropriations, FY84
	$158,230,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress—Continued
(s = shared with other institutions)

College/University	Amount	Law
Iowa State University	$450,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
Massachusetts Institute of Technology	$2,500,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)
Mississippi State University	$3,000,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
	$700,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
New York University	$300,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5921, Transportation appropriations, FY85)
North Dakota State University	$9,100,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
	$125,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)
Oregon Health Sciences University	$20,400,000	P.L. 98-63, Supplemental appropriations, FY83
Oregon State University	$3,000,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Pennsylvania State University	$2,500,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)
Purdue University	$250,000	P.L. 98-360, Energy appropriations, FY85
	$3,000,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
Rochester Institute of Technology	$1,800,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
Saint Paul Vocational-Technical Institute	$5,000,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
Seattle Community Central College	$5,000,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 6028, Labor, Health, and Human Services appropriations, FY85)
State University of New York	$8,500,000	P.L. 98-396, Supplemental appropriations, FY84
Texas Tech University	$900,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Tufts University	$2,000,000	P.L. 98-63, Supplemental appropriations, FY83
	$1,000,000	P.L. 98-396, Supplemental appropriations, FY84
	$1,800,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)
University of California (Davis)	language only	P.L. 98-360, Energy appropriations, FY85
University of California (Los Angeles)	language only	P.L. 98-360, Energy appropriations, FY85
University of Connecticut	$750,000	P.L. 98-63, Supplemental appropriations, FY83
University of the District	$63,609,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5899, District of Columbia appropriations, FY85)
	$1,237,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5899, District of Columbia appropriations, FY85)
University of Hawaii	$750,000	P.L. 98-63, Supplemental appropriations, FY83
University of Minnesota	$2,500,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)
University of Missouri	$450,000 (s)	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5743, Agriculture appropriations, FY85)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 98th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
University of New Hampshire	$15,000,000	P.L. 98-63, Supplemental appropriations, FY83
University of North Carolina	$8,000,000	P.L. 98-396, Supplemental appropriations, FY84
University of Oregon	$2,300,000	P.L. 98-360, Energy appropriations, FY85
University of Rochester	$7,800,000	P.L. 98-360, Energy appropriations, FY85
West Virginia University	$2,500,000	P.L. 98-473, Continuing appropriations, FY85 (H.R. 5973, Interior appropriations, FY85)

INDIVIDUAL COLLEGES AND UNIVERSITIES RECEIVING SPECIFIC APPROPRIATIONS IN THE 98th CONGRESS (FIRST SESSION)

P.L. 98-50--Energy and Water Development Appropriations, 1984 (H.R. 3132)

. . . $5,000,000 to initiate construction of a Vitreous State Laboratory at Catholic University.
(p. 89, H. Rept. 98-217)

. . . $5,000,000 to initiate construction of the National Center for Chemical Research at Columbia University.
(p. 89, H. Rept. 98-217)

P.L. 98-63--Making Supplemental Appropriations for the Fiscal Year Ending September 30, 1983, and for Other Purposes

. . . $750,000 shall be available for establishment and support of a research and training center focusing on pediatric rehabilitation at the University of Connecticut Health Center . . . .
(p. 50, H. Rept. 98-308 (conf.))

. . . $750,000 shall be available for a research and training center on the rehabilitation needs of the Pacific Basin to be located at the University of Hawaii.
(p. 51, H. Rept. 98-308 (conf.))

. . . $15,000,000 for construction and related costs for a center for advanced technology and development at the University of New Hampshire.
(p. 53, H. Rept. 98-308 (conf.))

. . . $7,500,000 be provided for construction and related costs for the Center Research Library at Boston College.
(p. 53, H. Rept. 98-308 (conf.))

. . . $20,400,000 for development of a Biomedical Information Communication Center at Oregon Health Sciences University in Portland, Oregon.
(p. 53, H. Rept. 98-308 (conf.))

P.L. 98-63--Making Supplemental Appropriations for the Fiscal Year Ending September 30, 1983, and for Other Purposes (cont'd)

Environmental Protection Agency (EPA):

. . . $2,000,000 for establishing a center for hazardous waste management . . . In establishing this center EPA should 'select a university with schools of biomedical sciences, engineering, nutrition and veterinary medicine as well as proven programs in urban and environmenal policy' (specific name not given although a specific institution is described).
(p. 35, H. Rept. 98-308 (conf.))

P.L. 98-139--Deparment of Labor, Health and Human Services, and Education and Related Agencies Appropriations, 1984 (H.R. 3913)

For Howard University .....$ 15,200,000

For Gallaudet College .....$ 52,000,000

. . . to enable Secretary of Education to expand funds appropriated in P.L. 98-63 in accordance with directives expressed on p. 53 of H. Rept. 98-308 accompanying H.R. 3069, making Supplemental Appropriations for FY83. Page 53 includes:

Oregon Health Sciences University
University of New Hampshire
Boston College

P.L. 98-212--Department of Defense Appropriations, 1984 (H.R. 4185)

Energy Conservation Technology:

. . . requests the Army to reprogram $820,000 within available funds to implement an interagency agreement with the Department of Energy and Georgetown University to study whether fuel cell technology could be combined with a coal gassification cogeneration program.
(p. 212, H. Rept. 98-427)

P.L. 98-360--Energy and Water Development Appropriations, 1985 (H.R. 5653)

. . . $9,200,000 to complete Vitreous State Laboratory at Catholic University;

. . . $3,000,000 to continue the National Center for Chemical Research at Columbia University;
(p. 93, H. Rept. 98-755)

. . . $7,000,000 to establish a supercomputer center at Florida State University:
(p. 93, H. Rept. 98-755)

. . . The Department is directed to allocate $250,000 to Purdue University for experimental contributions and research in the development of an 'Integral Fast Reactor' within the advanced breeder concepts program.
(p. 82, H. Rept. 98-755)

. . . biological and environmental research . . . within available funds, the Department (of Energy) to provide sufficient funds to continue the research programs currently being conducted at Rochester University, the University of California at Davis, and the University of California at Los Angeles . . . .
(p. 88, H. Rept. 98-755)

. . . inertial confinement fusion . . . within the glass laser program . . . $7,800,000 for the program at the University of Rochester.
(p. 111, H. Rept. 98-755) (p. 55, H. Rept. 98-866 (conf.))

. . . supporting research and technical analysis . . . a $2,300,000 grant for design and related activities for a science facility at the University of Oregon.
(p. 53, H. Rept. 98-866 (conf.))

P.L. 98-396--Second Supplemental Appropriations Act, 1984 (H.R. 6040)

National Oceanic and Atmospheric Administration . . . $8,000,000 for National Undersea Research Program at the University of North Carolina.
(p. 10, H. Rept. 98-977 (conf.))

. . . $1,000,000 for research at the center being established for hazardous waste management (implies Tufts University).
(p. 20, H. Rept. 98-977 (conf.))

P.L. 93-396--Second Supplemental Appropriations Act, 1984 (H.R. 6040)

Special Institutions:

. . . a supplemental of $2,000,000 for Gallaudet College . . . a supplemental of $11,000,000 for Howard University.
(p. 69, H. Rept. 98-916)

Economic Development Assistance:

. . . $19,000,000 for a grant to Boston University in the State of Massachusetts for the construction and related costs of the university engineering and technical training center.
(p. 10, H. Rept. 98-977 (conf.))

Department of Transportation-- Maritime Administration:

. . . $8,500,000 . . . for the acquisition and preconversion costs for a training vessel to be used at the State University of New York Maritime College.
(p. 11, H. Rept. 98-977 (conf.))

P.L. 98-473--Continuing Appropriations, 1985 (H.J. Res. 648)

This law contains funding for the following appropriations bills:

H.R. 5743-- Agriculture, Rural Development and Related Agencies Appropriations, 1985.

. . . $450,000 . . . grant to initiate an agriculture policy institute colocated at the University of Missouri and Iowa State University.
(p. 34, S. Rept. 98-566)

. . . $900,000 for plant stress and water conservation research at Texas Tech University.
(p. 24, H. Rept. 98-809)

. . . $1,800,000 for the Tufts University Nutrition Research Center.

. . . $300,000 for the Children's Center, Baylor College.
(p. 23, H. Rept. 98-809) (p. 8., H. Rept. 98-1071 (conf.))

. . . $700,000 in planning funds for a Warmwater Aquaculture Research Center at Mississippi State University.
(p. 10, H. Rept. 98-1071 (conf.))

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P.L. 98-473--Continuing Appropriations, FY 1985 (H.J. Res. 648)

. . . $9,100,000 for construction of the Metabolism and Radiation Research Laboratory at North Dakota State University.
(p. 10, H. Rept. 98-1071 (conf.))

. . . Forestry Research Centers of Excellence . . . $3,000,000 to Mississippi State University, Oregon State University, Purdue University.
(p. 35, S. Rept. 98-566) (p. 12, H. Rept. 98-1071 (conf.))

H.R. 5899--District of Columbia Appropriation, 1985.

. . . $63,609,000 for University of the District of Columbia (appears in chart).
(p. 38, H. Rept. 98-851) (p. 47, S. Rept. 98-568)

Capital Improvements Program:

. . . $1,237,000 for phase III, Van Ness Campus design for University of the District of Columbia.
(p. 63, S. Rept. 98-568)

H.R. 5921--Department of Transportation and Related Agencies Appropriations Bill, 1985

. . . $300,000 increase for the continuation of the Long-Range Future of Public Transportation in Large Cities Study being conducted by New York University Center for Urban Research.
(p. 75, H. Rept. 98-859)

H.R. 5973--Interior and Related Agencies Appropriations, 1985

. . . $125,000 . . . to continue the blackbird research program at North Dakota State University.
(p. 22, S. Rept. 98-578)

. . . $45,000 to continue the guard dog research program with Hampshire College.
(p. 19, H. Rept. 98-886)

. . . $2,500,000 for health and safety technology for respirable dust research to continue at Pennsylvania State University, West Virginia University, the University of Minnesota, and the Massachusetts Institute of Technology.
(p. 36, H. Rept. 98-886)

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P.L. 98-473--Continuing Appropriations, 1985 (H.J. Res. 648)

H.R. 6028--Department of Labor, Health and Human Services, and Education and Related Agencies Appropriations bill, 1985

. . . Gallaudet College . . . $58,700,000.

. . . Howard University . . . $158,230,000.
(p. 131-132, H. Rept. 98-911)

. . . $6,000,000 to provide a land grant endowment of $3,000,000 each for College of American Samoa and the College of Micronesia.
(p. 126, H. Rept. 98-911)

Education of the Handicapped:

. . . $5,000,000 for postsecondary programs. Since 1975 this activity has primarily supported four vocational-technical institutions serving multi-State regions (Seattle Community Central College, California South University at Northbridge, St. Paul Vocational-Technical Institute, and Delgado College in New Orleans) . . . .
(p. 110, H. Rept. 98-911)

. . . $1,800,000 in law for special initiatives projects . . . Area Health Education Center, Rochester Institute of Technology.
(p. 13, H. Rept. 98-1132 (conf.))

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress
(s = shared with other institutions)

College/University	Amount	Law
Atlanta University	$4,500,000	P.L. 99-141, Energy appropriations, FY86
	$5,500,000	P.L. 99-509, Omnibus Budget Reconciliation Act, FY86
Barry University	$2,000,000	P.L. 99-190, Continuing appropriations, FY86
Baylor College of Medicine	$1,000,000	P.L. 99-190 (H.R. 3037, Agriculture appropriations, FY86)
	$1,000,000	P.L. 99-500 (H.R. 5177, Agriculture appropriations, FY87)
Brown University	$5,000,000	P.L. 99-141, Energy appropriations, FY86
Cornell University	$100,000	P.L. 99-190 (H.R. 3037, Agriculture appropriations, FY86)
	$5,000,000	P.L. 99-190, Continuing appropriations, FY86
Drake University	$4,000,000	P.L. 99-88, Supplemental appropriations, FY85
	$800,000	P.L. 99-500, Continuing appropriations, FY87
Eastern Michigan University	$1,000,000	P.L. 99-178, Labor, Health, and Human Services appropriations, FY86
Fisk University	$169,000	P.L. 99-190, Continuing appropriations, FY86
Florida State University	$11,400,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress—Continued
(s = shared with other institutions)

College/University	Amount	Law
Gallaudet College	$62,000,000	P.L. 99-178, Labor, Health, and Human Services appropriations, FY86
	$62,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
Howard University	$164,230,000	P.L. 99-178, Labor, Health, and Human Services appropriations, FY86
	$170,230,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
	$800,000	P.L. 99-500, Continuing appropriations, FY87
Indiana University	$3,800,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)
	$6,000,000	P.L. 99-178, Labor, Health, and Human Services appropriations, FY86
Iowa State University	$5,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)
	$6,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Iowa State University	$650,000	P.L. 99-190, Continuing appropriations, FY86
	$50,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Jackson State University	$1,500,000	P.L. 99-141, Energy appropriations, FY86
	$1,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
	$1,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)
Johns Hopkins University	$1,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
Kansas State University	$1,900,000	P.L. 99-141, Energy appropriations, FY87
	$285,000	P.L. 99-500, Continuing appropriations, FY87
	$95,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$1,200,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Agriculture appropriations, FY87)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress—Continued
(a = shared with other institutions)

College/University	Amount	Law
Kansas State University	$100,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Loyola University	$4,000,000	P.L. 99-88, Supplemental appropriations, FY85
Massachusetts Institute of Technology	$2,200,000	P.L. 99-190, Continuing appropriations, FY86
	$2,600,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3011, Interior appropriations, FY86)
	$2,500,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5234, Interior appropriations, FY87)
Michigan State University	no $ amount	P.L. 99-180, Commerce
Mississippi State University	$3,500,000	P.L. 99-88, Supplemental appropriations, FY85
	$2,000,000 (a)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$250,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Mississippi Valley State University	$750,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
New Mexico State University	$1,000,000	P.L. 99-88, Supplemental appropriations, FY85

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Northeastern University	$13,500,000	P.L. 99-190, Continuing appropriations, FY86
Northwestern	$10,319,000	P.L. 99-190, Continuing appropriations, FY86
North Dakota State University	$340,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$60,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$144,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$75,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$250,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Oklahoma State University	$1,000,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3629, Defense appropriations, FY86)
	$5,000,000	P.L. 99-349, Supplemental appropriations, FY86
	$65,000	P.L. 99-88, Supplemental appropriations, FY85
Oregon Graduate Center	$1,000,000	P.L. 99-190, Continuing appropriations, FY86

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Oregon Health Science University	$10,000,000	P.L. 99-88, Supplemental appropriations, FY85
Oregon State University	$900,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Pennsylvania State University	$50,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$2,500,000 (s)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5234, Agriculture appropriations, FY87)
	$2,200,000 (s)	P.L. 99-190, Continuing appropriations, FY86
	$300,000	P.L. 99-190, Continuing appropriations, FY86
	$1,800,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Rochester Institute of Technology	$1,800,000	P.L. 99-178, Labor, Health, and Human Services appropriations, FY86
	$11,100,000	P.L. 99-190, Continuing appropriations, FY86
South Dakota State University	$46,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Southeastern Massachusetts University	$2,000,000 (s)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
State University of New York	$8,500,000	P.L. 99-349, Supplemental appropriations, FY86
Texas Tech University	$1,400,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$300,000 (s)	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
Thayer School of Engineering	$15,000,000	P.L. 99-88, Supplemental appropriations, FY85
Tufts University	$1,000,000	P.L. 99-190, Continuing appropriations, FY86
	$1,000,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$1,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$10,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5234, Interior appropriations, FY87)
Tulane University	$6,000,000	P.L. 99-141, Energy appropriations, FY86

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Tuskegee Institute (including land-grant colleges)	$600,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$5,400,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$2,000,000	P.L. 99-190 (H.R. 3037, Agriculture appropriations, FY86)
	$9,508,000 (s)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$1,988,000	P.L. 99-500, Continuing (H.R. 5177, Agriculture appropriations, FY87)
University of Akron Law School	$800,000	P.L. 99-500, Continuing appropriations, FY87
University of Alabama	no $ amount	P.L. 99-88, Supplemental appropriations, FY85
	$8,000,000	P.L. 99-141, Energy appropriations, FY86
	$2,900,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
	$12,300,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5162, Energy appropriations, FY87)

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Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
University of California	$10,560,000	P.L. 99-509, Omnibus Budget Reconciliation Act, FY86
University of California-Riverside	$1,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$300,000 (s)	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
University of the District of Columbia	$1,324,000	P.L. 99-88, Supplemental appropriations, FY85
	$68,861,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5175, District of Columbia appropriations, FY87)
	$4,781,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5175, District of Columbia appropriations, FY87)
University of Hawaii	$480,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$2,000,000 (s)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
University of Illinois	$3,000,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
	$2,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$27,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
University of Kansas	$200,000	P.L. 99-88, Supplemental appropriations, FY85
	$191,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$2,000,000	P.L. 99-190, Continuing appropriations, FY86
University of Massachusetts (Amherst)	$800,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 51.2, Energy appropriations, FY87)
University of Minnesota	$2,200,000 (s)	P.L. 99-190, Continuing appropriations, FY86
	$2,600,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3011, Interior appropriations, FY86)
	$4,500,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5234, Interior appropriations, FY87)
University of Nevada	$3,500,000	P.L. 99-190, Continuing appropriations, FY86

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
University of North Dakota	$4,000,000	P.L. 99-190, Continuing appropriations, FY86
	$3,036,412	P.L. 99-190, Continuing appropriations, FY86
University of Oregon	$8,500,000	P.L. 99-141, Energy appropriations, FY86
University of Rochester	$7,800,000	P.L. 99-141, Energy appropriations, FY86
University of South Carolina	$16,300,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services appropriations, FY87)
	$800,000	P.L. 99-500, Continuing appropriations, FY87
University of Southern Mississippi	$1,000,000	P.L. 99-190, Continuing appropriations, FY86
	$14,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$500,000	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3037, Agriculture appropriations, FY86)
University of Washington	$2,000,000 (s)	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
	$100,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5233, Labor, Health, and Human Services and Education appropriations, FY87)

Brief Listing of Colleges and Universities Receiving Specific Appropriations in the 99th Congress--Continued
(s = shared with other institutions)

College/University	Amount	Law
Virginia/Maryland Regional College of Veterinary Medicine	$300,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Washington State University	$2,000,000	P.L. 99-500, Continuing appropriations, FY87 (H.R. 5177, Agriculture appropriations, FY87)
Wichita State University	$2,000,000	P.L. 99-190, Continuing appropriations, FY86
West Virginia University	$2,200,000 (s)	P.L. 99-190, Continuing appropriations, FY86
	$2,600,000 (s)	P.L. 99-190, Continuing appropriations, FY86 (H.R. 3011, Interior appropriations, FY86)
	$2,500,000 (s)	P.L. 99-500, Continuing appropriations, FY86 (H.R. 5234, Interior appropriations, FY87)
	$2,200,000 (s)	P.L. 99-190, Continuing appropriations, FY86

INDIVIDUAL COLLEGES AND UNIVERSITIES THAT RECEIVED SPECIFIC APPROPRIATIONS IN THE 99TH CONGRESS

P.L. 99-88--Supplemental Appropriations, FY 1985
H.R. 2577

Department of Agriculture--Cooperative State Research Service:

. . . That payment to the New Mexico State University in the amount of $1,000,000 for its real or personal property interest is hereby determined to be an allowable project cost in accordance with section 513 of the Airport and Airway Improvement Act of 1982.

. . . For an additional amount for a grant to Mississippi State University to conduct a program for and to promote research excellence in the area of warmwater aquaculture, including such lands, building, and equipment as may be necessary to carry out, $3,500,000 including $700,000 made available by Public Law 98-473 which shall be transferred to and merged with this appropriation, to remain available until expended, and to be matched by an equal non-Federal share.

. . . For an additional amount for a grant to the University of Kansas for the evaluation and transfer of remote sensing applications to agricultural users, $200,000.

Economic Development Assistance Programs:

For an additional amount for economic development assistance programs . . . $30,730,000, to remain available until expended, of which $15,000,000 is for a grant to Thayer School of Engineering in Hanover, New Hampshire, for construction, renovation and related costs for facilities for its model interdisciplinary engineering program; and . . . $10,000,000 for a grant to the Oregon Health Sciences University Hospital in Portland, Oregon for the south wing rehabilitation project.

. . . $65,000 to assist in the establishment of a center for International Trade Development as a national demonstration project at Oklahoma State University.
(p. 24, H. Rept. 99-142)

P.L. 99-88--Supplemental Appropriations, FY 1985 (H.R. 2577) (cont'd)

Public Education System:

. . . $1,324,000 additional for the University of the District of Columbia.

Legal Services Corporation:

For an additional amount for "Payment to the Legal Services Corporation" for a grant for the establishment of the Gillis W. Long Poverty Law Center at the Loyola University School of Law in New Orleans, $4,000,000 to remain available until expended.

For an additional amount for a grant for the establishment of a clinical program to supplement the services of local Legal Services grantees at Drake University School of Law in Des Moines, Iowa, $4,000,000 to remain available until expended.

The Secretary of the Army, acting through the Chief of Engineers shall grant, within ninety days of enactment of this Act, to the University of Alabama at Huntsville the funds appropriated to the Secretary of the Army pursuant to title I of Public Law 98-50 for the design and construction of a Corps of Engineers learning facility at Huntsville, Alabama.
(99 Stat. 293-305)

P.L. 99-141--Energy and Water Development Appropriations, 1986 (H.R. 2959)

Supporting Research and Technical Analysis:

. . . Jackson State University . . . to serve as a model for the rest of the nation . . . commit up to $1,500,000 in FY 1986.

Biological Energy Research:

. . . $6,000,000 for the Center for Energy and Biomedical Technology at Tulane University.

P.L. 99-141—Energy and Water Development Appropriations, 1986 (H.R. 2959) (cont'd)

Construction:

. . . $4,500,000 to support establishment of a Center for Science and Technology at Atlanta University . . . . The Committee is recommending these funds to assist the Department in meeting its commitment under Executive Order 12320 to strengthen participation of the Historically Black Colleges and Universities in advanced scientific research and manpower development.

. . . $8,000,000 for an Energy and Mineral Research Center at the University of Alabama.

. . . $8,500,000 for an advanced Science Center at University of Oregon.

. . . $5,000,000 for a Demonstration Center for Information Technologies at Brown University.

. . . $1,900,000 for Kansas State University.

Civilian By-Products and Beneficial Uses:

. . . $5,000,000 for initial planning for pork irradiation demonstration in conjunction with Iowa State University.

Inertial Confinement Fusion:

. . . within the glass laser program . . . $7,800,000 for the University of Rochester.
(p. 41-51, H. Rept. 99-307 (conf.))

P.L. 99-178—Department of Labor, Health and Human Services and Education and Related Agencies Appropriations, 1986 (H.R. 3424)

Higher Education:

. . . $1,000,000 . . . for the renovation of Welch Hall at Eastern Michigan University in Ypsilanti, Michigan; . . . $1,800,000 toward to design and construction of an academic health education center at Rochester Institute of Technology.
(H. Rept. 99-289)

NOTE: P.L. 99-178 did not mention these specific activities, giving only a total of $10 million for academic facilities rather than $20 million as proposed in the House Report. (However, there was no amendment or disagreement about earmarking of funds so it is assumed that the above levels were accepted.)

The bill includes $6,000,000 for the construction of the Center for Excellence in Education at Indiana University.
(p. 34, H. Rept. 99-402 (conf.))

Special Institutions:

. . . $62,000,000 for Gallaudet College.

. . . $164,230,000 for Howard University.

P.L. 99-180—Commerce, Justice, State and Judiciary Appropriations, 1986 (H.R. 2965)

Department of Commerce—Economic Development Assistance:

. . . For the University Center program EDA is encouraged to fund land-grant institutions. A good example would be the funding of an innovative demonstration project that would create strong university linkages with urban public and private sector institutions for planning and implementing new economic and community development projects in Michigan, especially at Michigan State University.
(H. Rept. 99-197)

(Although the conference report H. Rept. 99-414 does not mention specifically Michigan State University, it does mention total funding for the University Center program of $5,000,000.)

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P.L. 99-190—Making Further Continuing Appropriations for FY 1986 and for Other Purposes (H.J. Res. 465)

Defense Research Sciences:

. . . $5,000,000 only for aviation research at Wichita State University, and $3,500,000 shall be used for computer research and related purposes at the University of Nevada (Las Vegas).
(p. 239, H. Rept. 99-450)

Military Disease Hazards Technology:

. . . $2,000,000 for neurotoxin research at the University of Kansas.
(p. 240, H. Rept. 99-450)

Defense Research Sciences:

. . . $650,000 for research and related purposes at Iowa State University.
(p. 258, H. Rept. 99-450)

. . . $13,500,000 for Engineering Research and related purposes at Northeastern University in Massachusetts.
(p. 258, H. Rept. 99-450)

. . . $1,000,000 . . . for advanced semi-conductor research at the Oregon Graduate Center.
(p. 263, H. Rept. 99-450)

. . . $1,000,000 for research at Oklahoma State University.

. . . $5,000,000 for . . . supercomputer . . . for use in basic research at Cornell.
(p. 263, H. Rept. 99-450)

. . . $11,100,000 for microelectronic engineering and imaging sciences at Rochester Institute of Technology.
(p. 264, H. Rept. 99-450)

Department of Interior—Bureau of Mines:

. . . $2,200,000 for respirable dust research to be conducted at Pennsylvania State University, West Virginia University, University of Minnesota, and the Massachusetts Institute of Technology.
(p. 290, H. Rept. 99-450)

. . . $300,000 to be used for a Coal Mine Injury Analysis Study at Pennsylvania State University.
(p. 291, H. Rept. 99-450 (conf.))

P.L. 99-190—Making Further Continuing Appropriations for FY 1986 and for Other Purposes (H.J. Res. 465) (cont'd)

Energy Conservation:

. . . $10,319,000 for the basic industries research facility at Northwestern University.
(p. 308, H. Rept. 99-450)

Fossil Energy Research and Development:

. . . $4,000,000 is to be provided from available funds for the University of North Dakota Energy Research Center . . . .
(p. 306, H. Rept. 99-450)

Department of Transportation—Research, Engineering and Development (Airport and Airway Trust Fund):

. . . $3,036,412 shall be available for icing and related next generation weather radar atmospheric research to be conducted by the University of North Dakota, $2,000,000 shall be available for the Center for Research and Training in Information-Based Aviation and Transportation Management at Barry University, $2,000,000 shall be available for the Institute for Aviation Safety Research at Wichita State University.
(p. 323, H. Rept. 99-450)

P.L. 99-190 provides funding for the following appropriations bills:

H.R. 3011—Department of Interior and Related Agencies Appropriations, 1986

National Park Service:

. . . $169,000 . . . for repairs to Jubilee Hall at Fisk University.

. . . $300,000 . . . to conduct the Coal Mine Injury Analysis Study at Pennsylvania State University.
(p. 22-36, H. Rept. 99-205)

P.L. 99-190 (cont'd)

H.R. 3037--Agriculture, Rural Development and Related Agencies Appropriations, 1986.

Nutrition Research:

. . . $1,000,000 . . . for the Human Nutrition Research Center on Aging at Tufts University.

. . . $1,000,000 for the Children's Nutrition Research Center at Baylor College of Medicine.

Water Conservation:

. . . $1,400,000 . . . these funds will be used to augment the existing plant stress and water conservation research now underway at Texas Tech University.

Limited Tillage Research:

. . . $100,000 for increased basic research . . . carried out by the Agricultural Research Service in cooperation with Cornell University.

. . . $480,000 for tri-fly research at University of Hawaii.

. . . $340,000 for sunflower research at North Dakota State University.

. . . $50,000 for a feasibility study for agricultural science and industry facility, Pennsylvania State University.

. . . $600,000 for planning for a new facility to be located within the School of Veterinary Medicine at Tuskegee Institute, a regional institute for food animal production, research and services.

. . . $3,000,000 for planning of a plant and animal sciences research center at the University of Illinois.
(p. 8-9, H. Rept. 99-439.)

P.L. 99-190 (cont'd)

Plant Genetics:

. . . $300,000 for a Plant Genetics/Water Research program involving Texas Tech University, University of California-Riverside, New Mexico State University . . . .

. . . $2,000,000 for strengthening grants for the 1890 (land grant) colleges and Tuskegee Institute.

. . . $500,000 for implementing research under the Critical Agricultural Materials Act to be carried out at the Polymer Institute at the University of Southern Mississippi. .
(p. 37, H. Rept. 99-211)

H.R. 3629--Department of Defense Appropriations, 1986

University Research Initiative:

. . . The Committee directs that $1,000,000 of the FY86 appropriations for this program be provided for research at the Oklahoma State University in Stillwater, Oklahoma.
(p. 349, H. Rept. 99-332)

P.L. 99-349--Urgent Supplemental Appropriations, (H.R. 4515)

Department of Transportation:

. . . The committee disapproved the deferral and expects the Department of Transportation and the Maritime Administration to make available the $8,500,000 appropriated for the training vessel for the State University of New York Maritime Academy.
(p. 19, H. Rept. 99-510)

Department of Agriculture--Cooperative State Research Service:

. . . A transfer of $5,000,000 from the Commodity Credit Corporation to the Cooperative State Research Service to meet the matching funds requirement for development of an international trade center at Oklahoma State University.
(p. 12, H. Rept. 99-649)

P.L. 99-500 Continuing Appropriations, 1987 (H.J. Res. 738)

P.L. 99-500 provides funding authority for the following appropriations bills:

H.R. 5177--Department of Agriculture Appropriations, 1987

. . . $1 million . . . for the Human Nutrition Research Center of Aging at Tufts University.
(p. 32, H. Rept. 99-686)

. . . $1 million . . . for the Children's Nutrition Research Center at Baylor College of Medicine.
(p. 32, H. Rept. 99-686) (p. 23, S. Rept. 99-438)

Agricultural Research and Development Consortium:

. . . The Committee recommends $2,000,000 for a grant to establish an R and D cooperative agreement . . . with the Biotechnology Center at the University of Illinois.
(p. 34, H. Rept. 99-686.)

. . . $27 million for construction of a plant and animal sciences research center at University of Illinois.
(p. 36, H. Rept. 99-686)

. . . $5.4 million for construction of a new facility to be located within the School of Veterinary Medicine at Tuskegee University.
(p. 36, H. Rept. 99-686)

. . . $1 million for the planning costs . . . construction of a salinity laboratory . . . University of California at Riverside.
(p. 36, H. Rept. 99-686)

. . . $9,508,000 for construction of research facilities of the 1890 land-grant colleges and Tuskegee University.
(p. 41, H. Rept. 99-686)

. . . $750,000 for grant to Mississippi Valley State University for purposes of curriculum development and strengthening in order that the university may receive benefits of 1890 land-grant colleges.
(p. 41, H. Rept. 99-686)

. . . $2,000,000 for aquaculture research . . . University of Washington; Southeastern Massachusetts University; Mississippi State; University of Hawaii.
(p. 41-42, H. Rept. 99-686)

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P.L. 99-500, Continuing Appropriations, 1987 (cont'd)

Grasshopper Fungus Research:

. . . $60,000 to North Dakota State University.
(p. 23, S. Rept. 99-438)

. . . $250,000 . . . Mississippi State University . . . conducting research on crown gall disease.
(p. 23, S. Rept. 99-438)

. . . $1,000,000 for Salinity Laboratory . . . University of California.

. . . $300,000 for construction of additional classroom space at the Virginia/Maryland Regional College of Veterinary Medicine.

. . . $1.8 million planning costs . . . Agricultural Science Center . . . Pennsylvania State University.

. . . $5.4 million for construction of a regional center for food and animal production, research and service at Tuskegee University School of Veterinary Medicine.

. . . $27 million for plant and animal sciences research center at the University of Illinois.
(p. 23, S. Rept. 99-438)

. . . $900,000 to construct a wheat marketing and demonstration lab operated under Oregon State University.

. . . $100,000 to conduct feasibility studies of Kansas State University's proposal for construction of a new planned science research center and educational satellite video communications center.
(p. 27, S. Rept. 99-439)

. . . $50,000 to conduct a study . . . of constructing a national center for food and industrial product development at Iowa State University.
(p. 28 S. Rept. 99-439)

P.L. 99-500, Continuing Appropriations, 1987 (cont'd)

Cooperative State Research Service:

. . . aquaculture centers . . . $4,000,000 . . . not limited to University of Washington, Mississippi State University, University of Hawaii.
(p. 32, S. Rept. 99-438)

Stored Crain Insects. . . $285,000 . . . Kansas State University.

International Livestock . . . $95,000 . . . Kansas State University.
(p. 32, S. Rept. 99-438)

Sunflower Insects:

. . . $144,000 . . . North Dakota State University.

. . . $46,000 . . . South Dakota State University.

Dried Bean:

. . . $75,000 to North Dakota State University.

Remote Sensing Application to Agricultural Users:

. . . $191,000 to University of Kansas.

Critical Agricultural Materials Act:

. . . $14 million for construction at Polymer Institution of University of Southern Mississippi.

. . . $2,000,000 for Food and Human Nutrition Center at Washington State University.
(p. 33, S. Rept. 99-438)

. . . $750,000 for grant to Mississippi Valley State University for curriculum development . . . .
(p. 34, S. Rept. 99-438)

. . . $1,988,000 for 1890 Colleges and Tuskegee University.
(p. 34, S. Rept. 99-438)

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P.L. 99-500 provides funding for the following appropriations bill:

H.R. 5162--Energy and Water Development Appropriations, 1987

Wind Energy Research:

. . . $800,000 is to be made available to the Renewable Energy Research Center program at the Universtiy of Maasachusetts at Amherst.
(p. 74, H. Rept. 99-670)

Byproducts Program (food irradiation projects):

. . . $5,000,000 for continuation of these projects . . . at Iowa State University.
(p. 82, H. Rept. 99-670)

Supporting Research and Technical Analysis:

. . . not less than $1 million in FY87 to maintain and support the Berkeley Laboratory, the Ana G. Mendez Education Foundation at Jackson State University.
(p. 91, H. Rept. 99-670)

Center for Nuclear Imaging Research:

. . . $12,300,000 for Center for Nuclear Imaging Research at University of Alabama at Birmingham.
(p. 91, H. Rept. 99-670)

Energy Research Complex:

. . . $16,300,000 . . . for the energy Research Comples at the Univeraity of South Carolina.
(p. 91, H. Rept. 99-670)

Applied Mathematical Sciences:

. . . $11,400,000 for Florida State University Supercomputer Center.
(p. 92, H. Rept. 99-670)

Center for Excellence in Education--Energy Utilization Performance Project:

. . . $3,800.000 . . . Center of Excellence in Education at Indiana University.
(p. 92, H. Rept. 99-670)

P.L. 99-500, Continuing Appropriations, 1987 (cont'd)

H.R. 5162--Energy and Water Development Appropriations, 1987 (cont'd)

. . . Center for new industrial materials . . . Iowa State University . . . $6,000,000.

. . . Chemical Sciences (85-ER-403) Kansas State University . . . $1,200,000.
(p. 94, H. Rept. 99-670)

H.R. 5175--District of Columbia Appropriations, 1987

Public Education System:

. . . University of the District of Columbia . . . $68,861,000.
(p. 45, H. Rept. 99-675)

Capital Improvement Program:

. . . University of the District of Columbia . . . $4,781,000 for four projects.
(p. 59, H. Rept. 99-675)

P.L. 99-500 provides funding for the following appropriations bill:

H.R. 5234--Department of Interior Appropriations, 1987

Bureau of Mines:

. . . $2,500,000 for respirable dust research to be conducted by Pennsylvania State University, West Virginia University, University of Minnesota, and Massachusetts Institute of Technology.
(p. 27. H. Rept. 99-1002 (conf.))

Energy Conservation Facilities:

. . . a conditional increase of $10 million for an energy research facility at Tufts . . . contingent on specific authorization legislation being enacted.
(p. 91, H. Rept. 99-714; p. 63, H. Rept. 99-1002)

P.L. 99-500, Continuing Appropriations, 1987 (cont'd)

H.R. 5233--Department of Labor, Health and Human Services and Education and Related Agencies Appropriations, 1987

Rehabilitation Services:

. . . $2,900,000 for a grant to the University of Alabama at Birmingham for a Comprehensive Head Injury Center.
(p. 29, H. Rept. 99-960 (conf.))

. . . Johns Hopkins University . . . $1,000,000.
(p. 29, H. Rept. 99-960 (conf.))

Special Institutions:

. . . Gallaudet . . . $62,000,000.

. . . Howard . . . $170,230,000.
(p. 29, H. Rept. 99-960 (conf.))

Department of Health and Human Services--Indian Health Services:

. . . fatal alcohol syndrome . . . $100,000 provided for the University of Washington's research program.
(p. 725, H. Rept. 99-1005)

P.L. 99-500, Continuing Appropriations, 1987 (cont'd)

Constitutional Law Resource Centers:

. . . $800,000 offered to Howard University Law School, Drake University Law School, University of Akron School of Law, University of South Carolina School of Law.
(p. 83, enrolled bill, P.L. 99-500)

P.L. 99-509--Omnibus Budget Reconciliation Act (H.R. 5300)

. . . the Center for Science and Technology, Atlanta University . . . $5,500,000.

. . . Advanced Science Center, University of Oregon . . . $22,900,000.

. . . Center for Advanced Medical Research . . . University of California . . . $10,560,000.

. . . $11,400,000 to continue to fulfill Federal share of an agreement with Supercomputer Computational Research Institute at Florida State University.
(p. 106, H. Rept. 99-1012)

APPENDIX

Authorization Bills Mentioning Specific Colleges and Universities in the 99th Congress (HEA = Higher Education Amendments of 1986, P.L. 99-498)

College/University	Authorization of Appropriations (FY87)	Law
Atlanta University	no $ amount	P.L. 99-498 HEA
Bethune-Cookman College	$6,200,000	P.L. 99-498 HEA
Boston College	no $ amount	P.L. 99-498 HEA
City University of New York	no $ amount	P.L. 99-498 HEA
Community College of Vermont	no $ amount	P.L. 99-498 HEA
Compton Community College	no $ amount	P.L. 99-498 HEA
Drew Postgraduate Medical School	no $ amount	P.L. 99-498 HEA
Eastern Michigan University	no $ amount	P.L. 99-498 HEA
Faulkner University	no $ amount	P.L. 99-498 HEA
Meharry Medical School	no $ amount	P.L. 99-498 HEA
Morehouse School of Medicine	no $ amount	P.L. 99-498 HEA
Oklahoma University (Carl Albert Center)	(authority no $ amount)	P.L. 99-498 HEA
Rochester Institute of Technology	$1,800,000	P.L. 99-498 HEA
Shaw University	$550,000	P.L. 99-498 HEA
Stonehill College (Martin Institute)	$4,000,000	P.L. 99-608

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Authorization Bills Mentioning Specific Colleges and Universities in the 99th Congress—Continued
(HEA = Higher Education Amendments of 1986, P.L. 99-498)

College/University	Authorization of Appropriations (FY87)	Law
Syracuse University	no $ amount	P.L. 99-145 (Department of Defense Authorization Act, 1986)
Tuskegee Institute	no $ amount	P.L. 99-498 HEA
University of Connecticut	$1,300,000	P.L. 99-498 HEA
University of Rhode Island	no $ amount	P.L. 99-498 HEA
Wayne County Community College	(authority only)	P.L. 99-498 HEA

NOTE: Based on the limited computerized search only the above entries appeared. This is by no means a comprehensive listing.

AUTHORIZING LEGISLATION MENTIONING SPECIFIC COLLEGES AND UNIVERSITIES IN THE 99TH CONGRESS

P.L. 99-145--Department of Defense Authorization Act, 1986 (S. 1160)

. . . authorizes computer and related research at Syracuse University, New York.

P.L. 99-498--Higher Education Amendments of 1986 (S. 1965)

Title III-- Institutional Aid

Eligibility Professional or Graduate Institutions:

. . . Morehouse School of Medicine . . . Meharry Medical School, Charles R. Drew Postgraduate Medical School, Atlanta University, Tuskegee Institute School of Veterinary Medicine.
(p. 31, H. Rept 99-861 (conf.))

Community College Pilot Project:

Wayne County Community College . . . Community College of Vermont . . . Compton Community College . . . Metropolitan Community College of Kansas City, Missouri.
(p. 241, H. Rept. 99-861 (conf.))

. . . provide financial assistance to Eastern Michigan University . . . for the purpose of the renovation and restoration of the physical facilities of Welch Hall.
(p. 283, H. Rept. 99-861 (conf.))

authorizes $1.8 million . . . to provide financial assistance to the Rochester Institute of Technology located in Rochester, New York to pay the Federal share of the cost of construction and related costs (including equipment) for the Academic Health Center facility at the Rochester Institute of Technology.
(p. 283, H. Rept. 99-861 (conf.))

P.L. 99-498--Higher Education Amendments of 1986 (S. 1965) (cont'd)

. . . to provide financial assistance to Shaw University . . . for the purpose of the renovation and restoration of the physical facility of Estey Hall . . . $550,000 are authorized.
(p. 284, H. Rept. 99-861 (conf.))

. . . to provide financial assistance to the Bethune-Cookman College to establish the Mary McLeod Bethune Memorial Fine Arts Center . . . $6,200,000.

. . . to pay the costs of establishing a business administration program . . . University of Rhode Island located at Kingston . . . $300,000.
(p. 284, H. Rept. 99-861 (conf.))

. . . provide financial assistance to pay costs of the Behavioral Science Facility at University of Connecticut at Storrs . . . $1,300,000.
(p. 284, H. Rept. 99-861 (conf.))

. . . City University of New York . . . to establish a center to coordinate resources for the development of solutions to pressing urban and social problems . . . Robert F. Wagner, Sr., Institute of Urban Public Policy.
(p. 317, H. Rept. 99-861 (conf.))

. . . Faulkner University . . . is relieved of all liability to repay the United States . . . $147,681.39 plus accrued interest and to pay $7,822.50 to the National Direct Student Loan Fund of the Faulkner University.
(p. 333, H. Rept. 99-861 (conf.))

. . . (Boston College) . . . cancel all annual debt service obligation . . . not to exceed $2,700,000 for the Department of Education Project Loan #5-1-00665-0.
(p. 334, H. Rept. 99-861 (conf.))

. . . Oklahoma University . . . Carl Albert Congressional Research and Studies Center . . . Funds appropriated in P.L. 97-377 shall be available as a direct appropriation . . . without regard to sec. 4(a) of H.R. 3598.
(p. 334, H. Rept. 99-861 (conf.))

P.L. 99-608--Authorization of Appropriations for Martin Institute (H.R. 4244)

. . . authorizes appropriations for the Joseph W. Martin Institute for Law and Society at Stonehill College, North Easton, Massachusetts . . . $4,000,000.

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BILLS AND REPORTS USED TO IDENTIFY SPECIFIC COLLEGES AND UNIVERSITIES RECEIVING APPROPRIATIONS DURING VARIOUS CONGRESSES

96th Congress, First Session

P.L. 96-38--Supplemental Appropriations, 1979 (H.R. 4289)

H. Rept. 96-227
S. Rept. 96-224
H. Rept. 96-331 (conf.)

P.L. 96-68--Departments of State, Commerce, and Justice Appropriations, 1980 (H.R. 4392)

H. Rept. 96-247
S. Rept. 96-251
H. Rept. 96-402 (conf.)

P.L. 96-69--Department of Energy Water Appropriations, 1980 (H.R. 4388)

H. Rept. 96-243
S. Rept. 96-242
H. Rept. 96-388 (conf.)

P.L. 96-74--Department of Treasury and Postal Appropriations, 1980 (H.R. 4393)

H. Rept. 96-248
S. Rept. 96-299
H. Rept. 96-471 (conf.)

P.L. 96-86--Continuing Appropriations, 1980 (H.J. Res. 412)

H. Rept. 96-500
Senate--No written report
H. Rept. 96-513 (conf.)

P.L. 96-93--District of Columbia Appropriations, 1980 (H.R. 4580)

H. Rept. 96-294
S. Rept. 96-257
H. Rept. 96-443 (conf.)

P.L. 96-103--Department of Housing and Urban Development Appropriations, 1980 (H.R. 4394)

H. Rept. 96-249
S. Rept. 96-259
H. Rept. 96-409, H. Rept 96-542 (conf.)

P.L. 96-108--Department of Agriculture Appropriations, 1980 (H.R. 4387)

H. Rept. 96-242
S. Rept. 96-246
H. Rept. 96-553 (conf.)

P.L. 96-123 Continuing Appropriations, 1980 (H.J. Res. 440)

H. Rept. 96-609
Senate--No written report
H. Rept. 96-646 (conf.)

P.L. 96-126--Department of Interior Appropriations, 1980 (H.R. 4930)

H. Rept. 96-374
S. Rept. 96-363
H. Rept. 96-604 (conf.)

P.L. 96-130--Military Construction Appropriations, 1980 (H.R. 4391)

H. Rept. 96-246
S. Rept. 96-407
H. Rept. 96-626

P.L. 96-131--Department of Transportation Appropriations, 1980 (H.R. 4440)

H. Rept, 96-272
S. Rept. 96-377
H. Rept. 96-610 (conf.)

P.L. 96-154--Department of Defense Appropriations, 1980 (H.R. 5359)

H. Rept. 96-450
S. Rept. 96-393
H. Rept. 96-696 (conf.)

H.R. 4389--Department of Labor, Health, Education and Welfare Appropriations, 1980

H. Rept. 96-244
S. Rept. 96-247
H. Rept. 96-400 (conf.)

(Contained in P.L.96-123, Continuing Appropriations, 1980)

96th Congress, Second Session

P.L. 96-243--Supplemental Agriculture, 1980 (H.J. Res. 545)

H. Rept. 96-927
Senate--No written report
H. Rept. 96-973 (conf.)

P.L. 96-304--Supplemental Appropriations/Rescissions Act, 1980 (H.R. 7542)

H. Rept. 96-1080
S. Rept. 96-829
H. Rept. 96-1149 (conf.)

P.L. 96-367--Department of Energy and Water Appropriations, 1981 (H.R. 7590)

H. Rept. 96-1093
S. Rept. 96-927
H. Rept. 96-1366

P.L. 96-369--Continuing Appropriations, 1981 (H.J. Res. 610)

H. Rept. 96-1327
Senate--No written report
H. Rept. 96-1443 (conf.)

P.L. 96-400--Department of Transportation Appropriations, 1981 (H.R. 7831)

H. Rept. 96-1193
S. Rept. 96-932
H. Rept. 96-1400 (conf,)

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P.L. 96-514--Department of Interior Appropriations, 1981 (H.R. 7724)

H. Rept. 96-1147
S. Rept. 96-985
H. Rept. 96-1470 (conf.)

P.L. 96-527--Department of Defense Appropriations, 1981 (H.R. 8105)

H. Rept. 96-1317
S. Rept. 96-1020
H. Rept. 96-1528 (conf.)

P.L. 96-528--Department of Agriculture Appropriations, 1981 (H.R. 7591)

H. Rept. 96-1095
S. Rept. 96-1030
H. Rept. 96-1519 (conf.)

P.L. 96-530--District of Columbia Appropriations, 1981 (H.R. 8061)

H. Rept. 96-1271
S. Rept. 96-969
H. Rept. 96-1477 (conf.)

P.L. 96-536--Continuing Appropriations, 1981 (H. J. Res. 644)

No written reports

H.R. 7998--Departments of Labor, Health and Human Services and Education Appropriations, 1981

H. Rept. 96-1244

97th Congress, First Session

P.L. 97-12--Supplemental Appropriations and Rescissions Act, 1981 (H.R. 3512)

S. Rept. 97-67
H. Rept. 97-29
H. Rept. 97-124 (Conf.)

P.L. 97-26--Urgent Supplemental Appropriations, 1981 (H. J. Res. 308)

Senate--No written report
H. Rept. 97-192

P.L. 97-51--Continuing Appropriations, 1982 (H. J. Res. 325)

H. Rept. 97-223
Senate--No written report
H. Rept. 97-260 (conf.)

P.L. 97-88--Department of Energy and Water Development Appropriations, 1982 (H.R. 4144)

H. Rept. 97-177
S. Rept. 97-256
H. Rept. 97-345 (conf.)

P.L. 97-91--District of Columbia Appropriations, 1982 (H.R. 4522)

H. Rept. 97-235
S. Rept. 97-254
H. Rept. 97-327 (conf.)

P.L. 97-100--Department of Interior Appropriations, 1982 (H.R. 4035)

H. Rept. 97-163
S. Rept. 97-166
H. Rept. 97-315 (conf.)

P.L. 97-101--Department of Housing and Urban Development Appropriations, 1982 (H.R. 4034)

H. Rept. 97-162
S. Rept. 97-163
H. Rept. 97-222 (conf.)

P.L. 97-102--Department of Transportation Appropriations, 1982 (H.R. 4209)

H. Rept. 97-186
S. Rept. 97-253
H. Rept. 97-331 (conf.)

P.L. 97-103--Agriculture, Rural Development and Related Agencies Appropriations, 1982 (H.R. 4119)

H. Rept. 97-172
S. Rept. 97-248
H. Rept. 97-313 (conf.)

P.L. 97-106--Military Construction, 1982 (H.R. 4241)

H. Rept. 97-193
S. Rept. 97-271
H. Rept. 97-400 (conf.)

P.L. 97-114--Department of Defense Appropriations, 1982 (H.R. 4995)

Senate--No written report
H. Rept. 97-333
H. Rept. 97-410 (conf.)

P.L. 97-121--Foreign Assistance Appropriations, 1982 (H.R. 4559)

H. Rept. 97-245
Senate--No written report
H. Rept. 97-416 (conf.)

H.R. 4560--Departments of Labor, Health and Human Services and Education Appropriations, 1982

H. Rept. 97-251
S. Rept. 97-268

(P.L. 97-51 contained funding for H.R. 4560)

H.J. Res. 357--Further Continuing Appropriations, 1982

H. Rept. 97-319
Senate--No written report
H. Rept. 97-352 (conf.)

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P.L. 97-147--Supplemental Agriculture Appropriations, 1982 (H.J. Res. 389)

H. Rept. 97-424
Senate--No written report

P.L. 97-148--Supplemental Labor Appropriations, 1982 (H. J. Res. 391)

H. Rept. 97-425
Senate--No written report

P.L. 97-161--Further Continuing Appropriations, 1982 (H.J. Res. 409)

H. Rept. 97-465
Senate--No written report

P.L. 97-216--Urgent Supplemental Appropriations, 1982 (H.R. 6685)

H. Rept. 97-632 (conf.)
Senate--No written report

H.R. 6957--Departments of Commerce, Justice, State, and Judiciary Appropriations, 1983 (S. 2956)

S. Rept. 97-584
H. Rept. 97-721

(Funding contained under P.L. 97-377)

P.L. 97-257--Supplemental Appropriations, 1982 (H.R. 6863)

H. Rept. 97-673
S. Rept. 97-516
H. Rept. 97-747 (conf.)

P.L. 97-272--Department of Housing and Urban Development and Independent Agencies Appropriations, 1983 (H.R. 6956)

H. Rept. 97-720
S. Rept. 97-549
H. Rept. 97-891 (conf.)

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P.L. 97-276--Continuing Appropriations, 1983 (H.J. Res. 599)

H. Rept. 97-834
S. Rept. 97-581
H. Rept. 97-914 (conf.)

P.L. 97-323--Military Construction Appropriations, 1983 (H.R. 6968) (H. Res. 551)

H. Rept. 97-726
S. Rept. 97-572
H. Rept. 97-913 (conf.)

P.L. 97-369--Department of Transportation Appropriations, 1983 (H.R. 7019)

H. Rept. 97-783
S. Rept. 97-567
H. Rept. 97-960 (conf.)

P.L. 97-370--Department of Agriculture Appropriations, 1983 (H.R. 7072)

H. Rept. 97-800
S. Rept. 97-566
H. Rept. 97-957 (conf.)

P.L. 97-378--District of Columbia Appropriations, 1983 (H.R. 7144)(S. 2917)

H. Rept. 99-849
S. Rept. 97-548
H. Rept. 97-972 (conf.)

P.L. 97-377--Further Continuing Appropriations, 1983 (H.J. Res. 631)

H. Rept. 97-959
Senate--No written report
H. Rept. 97-980 (conf.)

H.R. 7205--Departments of Labor, Health and Human Services, and Education and Related Agencies Appropriations, 1983

H. Rept. 97-894
S. Rept. 97-680

(Funding contained under P.L. 97-276)

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P.L. 97-394—Department of Interior Appropriations, 1983 (H.R. 7356)

H. Rept. 97-942
Senate—No written report
H. Rept. 97-978 (conf.)

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P.L. 98-63--Supplemental Appropriations, 1983 (H.R. 3069)

H. Rept. 98-207
S. Rept. 98-148
H. Rept 98-308 (conf.)

P.L. 98-50--Department of Energy Appropriations, 1984 (H.R. 3132)

H. pt. 98-217
S. Rept. 98-153
H. Rept. 98-272 (conf.)

P.L. 98-45--Department of Housing and Urban Development Appropriations, 1984 (H.R. 3133)

H. Rept 98-223
S. Rept. 98-152
H. Rept. 98-264 (conf.)

P.L. 98-166--Departments of Commerce, Justice, State Judiciary Appropriations, 1984 (H.R. 3222)

H. Rept. 98-232
Senate--No written report
H. Rept. 98-478 (conf.)

H.R. 3223--Department of Agriculture Appropriations, 1984

H. Rept. 98-231
S. Rept. 98-160
H. Rept. 98-450 (conf.)

P.L. 98-78--Department of Transportation Appropriations, 1984 (H.R. 3329)

H. Rept. 98-246
S. Rept. 98-179
H. Rept. 98-318 (conf.)

P.L. 98-139--Departments of Labor, Health and Human Services and Education Appropriations, 1984 (H.R. 3913)

H. Rept. 98-357
S. Rept. 98-247
H. Rept. 98-422 (conf.)

P.L. 98-151—Further Continuing Appropriations, 1984 (H.J. Res. 413)

H. Rept. 98-520
Senate—No written report
H. Rept. 98-540 (conf.)

P.L. 98-181—Supplemental Appropriations Act, 1984 (H.R. 3959)

H. Rept. 98-375
S. Rept. 98-275
H. Rept. 98-551 (conf.)

P.L. 98-212—Department of Defense Appropriations, 1984 (H.R. 4185)

H. Rept. 98-427
S. Rept. 98-292
H. Rept. 98-567 (conf.)

98th Congress, Second Session

P.L. 98-332—Supplemental Agriculture Appropriations 1984, (H.J. Res. 492)

H. Rept. 98-604
S. Rept. 98-365
H. Rept. 98-792 (conf.)

P.L. 98-248—Supplemental Health and Human Services Appropriations, 1984 (H.J. Res. 493)

H. Rept. 98-605 (conf.)
Senate—No written report
H. Rept. 98-632 (conf.)

H.J. Res. 517--Supplemental Housing and Urban Development Appropriations, 1984

H. Rept. 98-630
(No additional written reports)

H.R. 5564—Supplemental Appropriations, 1984

H. Rept. 98-729
(No additional written reports)

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P.L. 98-360--Department of Energy and Water Development Appropriations, 1985 (H.R. 5653)

H. Rept. 98-755
S. Rept. 98-502
H. Rept. 98-866 (conf.)

P.L. 98-411--Departments of Commerce, Justice, State, and Judiciary Appropriations, 1985 (H.R. 5712)

H. Rept. 98-802
S. Rept. 98-514
H. Rept. 98-952 (conf.)

P.L. 98-371--Department of Housing and Urban Development Appropriations, 1985 (H.R. 5713)

H. Rept. 98-803
S. Rept. 98-506
H. Rept. 98-867 (conf.)

H.R. 5743--Department of Agriculture Appropriations, 1985

H. Rept. 98-809
S. Rept. 98-566
H. Rept. 98-1071 (conf.)

P.L. 98-367--Legislative Branch Appropriations, 1985 (H.R. 5753)

H. Rept. 98-811
S. Rept. 98-515
H. Rept. 98-870 (conf.)

H.R. 5798--Department of Treasury Appropriations, 1985 (S. 2853) (Companion bill)

H. Rept. 98-830
S. Rept. 98-562
H. Rept. 98-993 (conf.)

H.R. 5813--Department of Transportation Appropriations, 1985 (H. Res. 524)

H. Rept. 98-833
H. Rept. 98-839

H.R. 5898--Military Construction, 1985

H. Rept. 98-850
S. Rept. 98-567

H.R. 5899--District of Columbia Appropriations, 1985

H. Rept. 98-851
S. Rept. 98-568
H. Rept. 98-1088 (conf.)

H.R. 5921--Department of Transportation Appppropriations, 1985 (S. 2852) (Companion bill)

H. Rept. 98-859
S. Rept. 98-561

H.R. 5973--Department of Interior Appropriations, 1985

H. Rept. 98-886
S. Rept. 98-578

H.R. 6028--Departments of Labor, Health and Human Services and Education Appropriations, 1985 (S. 2836) (Companion bill)

H. Rept. 98-911
S. Rept. 98-544
H. Rept. 98-1132 (conf.)

P.L. 98-396--Second Supplemental Appropriations, 1984 (H.R. 6040)

H. Rept. 98-916
S. Rept. 98-570
H. Rept. 98-977 (conf.)

H.R. 6237--Foreign Assistance Appropriations, 1985 (S. 2793) (Companion bill)

H. Rept. 98-1021
S. Rept. 98-531

P.L. 98-473--Continuing Appropriations, 1985 (H.J. Res. 648) (S.J. Res. 356) (Companion bill)

H. Rept. 98-1030
S. Rept. 98-634
H. Rept. 98-1159 (conf.)

H.R. 6329--Department of Defense Appropriations, 1985 (S. 3026)

H. Rept. 98-1086
S. Rept. 98-636

P.L. 98-441--Continuing Appropriations, 1985 (H.J. Res. 653)

No accompanying reports

P.L. 98-453--Continuing Appropriations, 1985 (H.J. Res. 656)

No accompanying reports

P.L. 98-455--Continuing Appropriations, 1985 (H.J. Res. 659)

No accompanying reports

P.L. 98-461--Continuing Appropriations, 1985 (H.J. Res. 663)

No accompanying reports

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P.L. 99-10--Supplemental Appropriations (H.R. 1239)

H. Rept. 99-2
S. Rept. 99-8
H. Rept. 99-29 (conf.)

P.L. 99-88--Supplemental Appropriations, 1985 (H.R. 2577)

H. Rept. 99-142
S. Rept. 99-82
H. Rept. 99-236 (conf.)

P.L. 99-141--Department of Energy and Water Development Appropriations, 1986 (H.R. 2959)

H. Rept. 99-195
S. Rept. 99-110
H. Rept. 99-307 (conf.)

P.L. 99-180--Departments of Commerce, Justice, State, Judiciary Appropriations, 1986 (H.R. 2965)

H. Rept. 99-197
S. Rept. 99-150
H. Rept. 99-414 (conf.)

H.R. 3011--Department of Interior Appropriations, 1986

H. Rept. 99-205
S. Rept. 99-141

(See P.L. 99-190)

H.R. 3036--Departments of Treasury, Postal and General Government Appropriations, 1986

H. Rept. 99-210
S. Rept. 99-133
H. Rept. 99-349 (conf.)

(See P.L. 99-190)

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H.R. 3037--Department of Agriculture, Rural Development and Related Agencies Appropriations, 1986

H. Rept. 99-211
S. Rept. 99-137
H. Rept. 99-439 (conf.)

(See P.L. 99-190)

P.L. 99-160--Department of Housing and Urban Development Appropriations, 1986 (H.R. 3038)

H. Rept. 99-212
S. Rept. 99-129
H. Rept. 99-363 (conf.)

H.R. 3067-- District of Columbia Appropriations, 1986

H. Rept. 99-223
S. Rept. 99-134
S. Rept. 99-419 (conf.)

(See P.L. 99-190)

H.R. 3228--Foreign Assistauce Appropriations, 1986

H. Rept. 99-252

(See P.L. 99-190)

H.R. 3244--Department of Transportation Appropriations, 1986

H. Rept. 99-256
S. Rept. 99-152

(See P.L. 99-190)

P.L. 99-173--Military Construction Appropriations, 1986 (H.R. 3327)

H. Rept. 99-275
S. Rept. 99-168
H. Rept. 99-380 (conf.)

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P.L. 99-178--Departments of Labor, Health and Human Services, and Education and Related Agencies Appropriations, 1986 (H.R. 3424)

H. Rept. 99-289
S. Rept. 99-151
H. Rept. 99-402 (conf.)

H.R. 3629--Department of Defense Appropriations, 1986

H. Rept. 99-332

P.L. 99-177--Balanced Budget and Emergency Deficit Control Act, 1985 (H.J. Res. 372)

H. Rept. 99-351
S. Rept. 99-144
H. Rept. 99-433 (conf.)

P.L. 99-103--Continuing Appropriations, 1986 (H.J. Res. 388)

H. Rept. 99-272
S. Rept. 99-142

P.L. 99-154--Further Continuing Appropriations, 1986 (H.J. Res. 441)

No accompanying reports

P.L. 99-190--Further Continuing Appropriations, 1986 (H.J. Res. 465)

H. Rept. 99-403
S. Rept. 99-210
H. Rept. 99-450 (conf.)

P.L. 99-179--Further Continuing Appropriations, 1986 (H.J. Res. 476)

No accompanying reports

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P.L. 99-243--Urgent Supplemental Appropriations, 1987 (H.J. Res. 520)

No accompanying reports

P.L. 99-263--Urgent Supplemental Appropriations, 1986 (H.J. Res. 534) (for Agriculture)

H. Rept. 99-492 (conf.)
Senate--No written report
H. Rept. 99-499 (conf.)

P.L. 99-349--Urgent Supplemental Appropriations, 1986 (H.R. 4515)

H. Rept. 99-510
S. Rept. 99-301
H. Rept. 99-649 (conf.)

H.R. 5052--Military Construction Appropriations, 1987

H. Rept. 99-648
S. Rept. 99-368

(See P.L. 99-500)

H.R. 5161--Departments of Commerce, Justice, State, Judiciary Appropriations, 1986

H. Rept. 99-669
S. Rept. 99-425

(See P.L. 99-500)

H.R. 5162--Department of Energy and Water Development Appropriations, 1987

H. Rept. 99-670
S. Rept. 99-441

(See P.L. 99-500)

H.R. 5175--District of Columbia Appropriations, 1987

H. Rept. 99-675
S. Rept. 99-367

(See P.L. 99-500)

H.R. 5177--Department of Agriculture Appropriations, 1987

H. Rept. 99-686
S. Rept. 99-438

(See P.L. 99-500)

P.L. 99-272--Deficit Reduction Amendments of 1985 (H.R. 3128)

H. Rept. 99-241
Senate--No written report
H. Rept. 99-453 (conf.)

H.R. 5205--Department of Transportation Appropriations, 1987

H. Rept. 99-696
S. Rept. 99-423
H. Rept. 99-976 (conf.)

H.R. 5233--Departments of Labor, Health and Human Services and Education Appropriations, 1987

H. Rept. 99-711
S. Rept. 99-408
H. Rept. 99-960 (conf.)

(See P.L. 99-500)

H.R. 5234--Department of Interior Appropriations, 1987

H. Rept. 99-714
S. Rept. 99-397
H. Rept. 99-1002

(See P.L. 99-500)

H.R. 5294--Department of Treasury, Postal Appropriations, 1987

H. Rept. 99-723
S. Rept. 99-406

(See P.L. 99-500)

H.R. 5313--Department of Housing and Urban Development, 1987

H. Rept. 99-731
S. Rept. 99-487
H. Rept. 99-977 (conf.)

(See P.L. 99-500)

H.R. 5339--Foreign Assistance Appopriations, 1987 (S. 2824)

H. Rept. 99-747
S. Rept. 99-443

(See P.L. 99-500)

H.R. 5438--Department of Defense Appropriations, 1987

H. Rept. 99-793
S. Rept. 99-446

(See P.L. 99-500)

P.L. 99-434--Continuing Appropriations, 1987 (H.J. Res. 743)

No accompanying reports

P.L. 99-464--Continuing Appropriations, 1987 (H.J. Res. 750)

No accompanying reports

P.L. 99-465--Continuing Appropriations, 1987 (H.J. Res. 751)

No accompanying reports

P.L. 99-491--Further Continuing Appropriations, 1987 (H.J. Res. 753)

No accompanying reports

P.L. 99-500--Continuing Appropriations, 1987 (H.J. Res. 738)

House--No initial report
S. Rept. 99-500
H. Rept. 99-1005 (conf.)

P.L. 99-509—Omnibus Budget Reconciliation Act, 1986 (H.R. 5300)

H. Rept. 99-727
S. Rept. 99-348
H. Rept. 99-1012 (conf.)