Investing in the Future

NSF Cost Sharing Policies for a Robust Federal Research Enterprise

August 3, 2009

National Science Board

Cover Design by Kim L. Silverman, National Science Board Office, National Science Foundation

NSB-09-20

Investing in the Future

NSF Cost Sharing Policies for a Robust Federal Research Enterprise

National Science Board

Est. 1950

National Science Foundation

August 3, 2009

About the National Science Board

The National Science Board (Board) is composed of 25 Presidentially appointed, Senate-confirmed Members, including the Director of the National Science Foundation (NSF). The Board establishes the policies of NSF within the framework of applicable national policies set forth by the President and Congress. In this capacity, the Board identifies issues that are critical to NSF's future, approves NSF's strategic budget directions, approves annual budget submissions to the Office of Management and Budget, approves new programs and major awards, analyzes NSF's budget to ensure progress and consistency along the strategic direction set for NSF, and ensures balance between initiatives and core programs. The Board also serves as an independent policy advisory body to the President and Congress with a statutory obligation to "…*render to the President and the Congress reports on specific, individual policy matters related to science and engineering and education in science engineering, as the Board, the President, or the Congress determines the need for such reports" and to "render to the President and the Congress no later than January 15 of each even numbered year, a report on indicators of the state of science and engineering in the United States.*" (42 U.S.C. Section 1863) SEC.4.(j)(2) and (1).

National Science Board Members

Steven C. Beering, *Chairman*, President Emeritus, Purdue University, West Lafayette, Indiana

Patricia D. Galloway, *Vice Chairman*, Chief Executive Officer, Pegasus Global Holdings, Inc., Cle Elum, Washington

Mark R. Abbott, Dean and Professor, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, Oregon

Dan E. Arvizu, Director and Chief Executive, National Renewable Energy Laboratory (NREL), Golden, Colorado

Barry C. Barish,* Director, Global Design Effort for International Linear Collider, Linde Professor of Physics, Emeritus, California Institute of Technology, Pasadena, California

Camilla P. Benbow, Patricia and Rodes Hart Dean of Education and Human Development, Peabody College of Education and Human Development, Vanderbilt University, Nashville, Tennessee

Ray M. Bowen, President Emeritus, Texas A&M University, College Station, Texas

John T. Bruer, President, The James S. McDonnell Foundation, Saint Louis, Missouri

G. Wayne Clough, Secretary, Smithsonian Institution, Washington, DC

France A. Córdova, President, Purdue University, West Lafayette, Indiana

Kelvin K. Droegemeier, Associate Vice President for Research, Regents' Professor of Meteorology and Weathernews Chair, University of Oklahoma, Norman, Oklahoma

José-Marie Griffiths, Dean and Professor, School of Information and Library Science, Director of Biomedical Informatics, TraCS Institute, School of Medicine, University of North Carolina, Chapel Hill, North Carolina

Esin Gulari, Dean of Engineering and Science, Clemson University, Clemson, South Carolina

---

* Consultant

Elizabeth Hoffman,* Executive Vice President and Provost, Iowa State University, Ames, Iowa

Louis J. Lanzerotti, Distinguished Research Professor of Physics, Center for Solar Terrestrial Research, Department of Physics, New Jersey Institute of Technology, Newark, New Jersey

Alan I. Leshner, Chief Executive Officer and Executive Publisher, *Science*, American Association for the Advancement of Science, Washington, DC

G.P. "Bud" Peterson, President, Georgia Institute of Technology, Atlanta, Georgia

Douglas D. Randall, Professor and Thomas Jefferson Fellow, University of Missouri, Columbia, Missouri

Arthur K. Reilly, Senior Director, Strategic Technology Policy, Cisco Systems, Inc., Ocean, New Jersey

Diane L. Souvaine, Professor and Chair, Department of Computer Science, Tufts University, Medford, Massachusetts

Jon C. Strauss, Interim Dean, Edward E. Whitacre Jr. College of Engineering, Texas Tech University, Lubbock, Texas

Kathryn D. Sullivan, Director, Battelle Center for Mathematics and Science Education Policy, John Glenn School of Public Affairs, Ohio State University, Columbus, Ohio

Thomas N. Taylor, Roy A. Roberts Distinguished Professor, Department of Ecology and Evolutionary Biology, Curator of Paleobotany in the Natural History Museum and Biodiversity Research Center, The University of Kansas, Lawrence, Kansas

Richard F. Thompson, Keck Professor of Psychology and Biological Sciences, University of Southern California, Los Angeles, California

Member ex officio:
Arden L. Bement, Jr., Director, National Science Foundation, Arlington, Virginia

---

Craig R. Robinson, Acting Executive Officer, National Science Board and National Science Board Office Director, Arlington, Virginia

Task Force on Cost Sharing, Committee on Strategy and Budget

- Kelvin K. Droegemeier, Chairman
- Mark R. Abbott
- Camilla P. Benbow
- Jon C. Strauss
- Thomas N. Taylor
- Richard F. Thompson

- Steven C. Beering, *ex officio*
- Arden L. Bement, Jr., *ex officio*
- Patricia D. Galloway, *ex officio*

* Consultant

Contents

National Science Board

August 3, 2009

MEMORANDUM FROM THE CHAIRMAN OF THE NATIONAL SCIENCE BOARD

SUBJECT: Investing in the Future: NSF Cost Sharing Policies for a Robust Federal Research Enterprise

The National Science Board (Board) established the Task Force on Cost Sharing (Task Force) in October 2007 to examine issues related to NSF cost sharing policy, in response to a directive in the August 2007 America COMPETES Act (P.L. 110-69). This Congressional directive focused specifically on the impacts of the Board's 2004 decision to eliminate NSF program-specific mandatory cost sharing requirements on existing programs that were developed around industry partnerships and historically required cost sharing, such as the Engineering Research Centers program and the Industry/University Cooperative Research Centers program. The Task Force broadened the scope of its examination to include other capacity-building programs that historically required significant cost sharing, such as the Experimental Program to Stimulate Competitive Research, and additional issues related to NSF cost sharing policy.

This report prescribes a set of recommendations with two primary objectives: (1) to allow, but narrowly circumscribe, the application of mandatory cost sharing requirements in NSF programs in which cost sharing is foundational to achieving programmatic goals, and (2) to prohibit voluntary committed cost sharing in NSF proposals and thus eliminate post-award tracking and reporting requirements associated with such cost sharing.

The Board firmly believes that prohibiting voluntary committed cost sharing, and permitting mandatory cost sharing requirements only in limited and appropriate circumstances, will not reduce institutional commitment and financial contributions to NSF-sponsored projects or negatively impact institutional stewardship of Federal resources. Instead, it likely will enhance the ability of institutions to strategically and flexibly plan, invest in, and conduct research projects and programs, and will promote equity among grantee institutions in NSF funding competitions.

Steven C. Beering

Steven C. Beering
Chairman
National Science Board

National Science Foundation
4201 Wilson Boulevard • Arlington, Virginia 22230 • (703) 292-7000 • http://www.nsf.gov/nsb • email: NSBoffice@nsf.gov

Acknowledgments

We are deeply grateful to the many members of the science and engineering research and education community who generously contributed their time and insight to the development of this report. Especially deserving of recognition are those individuals who participated in three public roundtable discussions held at the National Science Foundation (NSF), the lists of whom are provided in Appendixes D, E, and F of this report. We also thank those who responded to public comment opportunities on issues related to cost sharing and on a draft of this report, including in particular the Council on Governmental Relations, American Association of Universities, National Association of State Universities and Land-Grant Colleges, and Association of Independent Research Institutes. Their valuable contributions and continued interest in the Board's activity on behalf of their member colleges and universities is greatly appreciated.

We also appreciate the valuable input provided throughout the report development process by the following NSF staff members: Mr. Thomas Cooley, Chief Financial Officer and Director, Office of Budget, Finance, and Award Management (BFA); Ms. Jean Feldman, Head, Policy Office, Division of Institution and Award Support (DIAS), BFA; Mr. James Noeth, Senior Audit Manager, Office of Inspector General (OIG); Ms. Joanna Rom, Deputy Director, BFA; Ms. Mary Santonastasso, Director, DIAS, BFA; Ms. Beth Strausser, Senior Policy Specialist, Policy Office, DIAS, BFA; Ms. Joyce Werking, Audit Manager, OIG; and Mr. Charlie Ziegler, Special Assistant for Cost Analysis and Audit Resolution, DIAS, BFA.

The National Science Board Office provided valuable and essential support to the Task Force's work. Especially deserving of recognition is Ms. Jennifer Richards, Executive Secretary to the Task Force, who provided the primary staff support for this effort and had a significant role in drafting this report. We also extend our thanks to Dr. Michael Crosby, Interim Vice Chancellor for Research, University of Hawaii – Hilo (formerly Executive Officer and Board Office Director, National Science Board); Dr. Russell Moy, Senior Advisor and General Council, Southeastern Universities Research Association (formerly Senior Science and Engineering Policy Analyst and Legal Affairs Coordinator); and Dr. Robert Webber, Senior Science Policy Analyst.

Process for Producing the Report

To prepare this report, the Board engaged in extensive dialogue with and outreach to NSF senior management, policy staff, and other subject matter experts, as well as the research community. Primary objectives of the Board throughout this study were to actively involve stakeholders who will be affected by changes to NSF cost sharing policy, and to fully examine the implications of any potential policy changes.

This report is the second of two reports focused on NSF cost sharing policy released by the Board following a Congressional directive in the 2007 America COMPETES Act (P.L. 110-69). The directive required the Board to examine certain consequences of the Board's 2004 revision to NSF cost sharing policy that eliminated all mandatory cost sharing requirements in NSF programs. In February 2008, the Board released its first report, *Report to Congress on Cost Sharing Policies at the National Science Foundation* (NSB-08-17). The report focused specifically on issues raised by Congress, related to the impacts of its 2004 policy revision on programs that were developed around industry partnerships and historically required industry cost sharing. To inform this report, the Board held a public roundtable discussion in December 2007 and several discussions with leaders in the Engineering Research Centers program, the Industry/University Cooperative Research Centers program, and the Experimental Program to Stimulate Competitive Research. The Board also consulted recent literature on cost sharing, including a special issue of the National Council of University Research Administrators journal, *Research Management Review*, dedicated to the topic.

To develop this second report, the Board engaged in additional outreach activities to broadly solicit input from stakeholders. These activities included a request for comment from NSF's Advisory Committees in April 2008; two public roundtable discussions in July 2008 with invited representatives of stakeholder groups; and a two-month public comment opportunity from August to October 2008, publicized through the *Federal Register* and by an NSF Dear Colleague letter. Additionally, the Board held a three-week public community opportunity on a draft of this report from January to February 2009. Throughout these activities, the Board actively involved NSF senior management and policy officials.

The Board's recommendations herein are based on careful analyses of available information, including perspectives from multiple stakeholder groups such as grantee institutions, organizations representing grantee institutions, and NSF. Unfortunately, although general concurrence exists regarding the level, frequency, and impacts of cost sharing in NSF-sponsored research, little robust quantitative evidence is available on which to base definitive conclusions. Data describing cost sharing for NSF awards is recorded only through dollar commitments listed on Line M in the proposal budget. Line M commitments do not distinguish between resources committed to meet mandatory cost sharing requirements and resources committed as voluntary cost sharing. Further, Line M commitments do not include any cost sharing commitments made elsewhere in proposals (e.g., in-kind resource commitments made in the proposal text).

Report Motivation

On August 9, 2007, the America COMPETES Act (P.L. 110-69) directed the National Science Board (Board) to "evaluate the impact of its [2004] policy to eliminate cost sharing for research grants and cooperative agreements for existing programs that were developed around industry partnerships and historically required industry cost sharing, such as the Engineering Research Centers [ERCs] and Industry/University Cooperative Research Centers [I/UCRCs]." The Act directed that the Board "also consider the impact that the cost sharing policy has on initiating new programs for which industry interest and participation are sought." The Act also mandated that the National Science Foundation (NSF) implement mandatory cost sharing in the Major Research Instrumentation Program and the Robert Noyce Teacher Scholarship Program.

In response to this Congressional directive, the Board's Committee on Strategy and Budget (CSB) established a Task Force on Cost Sharing[1] in October 2007 to examine the issues raised by Congress, with emphasis on the Board's 2004 revision to NSF cost sharing policy that eliminated NSF program-specific mandatory cost sharing requirements. Prior to 2004, specific NSF programs could set mandatory cost sharing requirements for solicited proposals. The 2004 revision to NSF cost sharing policy did not impact the statutory requirement for one percent cost sharing for all unsolicited proposals.[2]

The Board undertook an intensive study to accomplish the tasks described above and broadened the scope of its examination to include other capacity-building NSF programs that historically required significant cost sharing, such as the Experimental Program to Stimulate Competitive Research (EPSCoR).

The Board issued a report to Congress in February 2008 that recommended, for immediate implementation, a suite of targeted changes to NSF cost sharing policy. The Board committed to engage in additional study and issue this more comprehensive follow-up report that contains additional recommendations for NSF cost sharing policy.

Investing in the Future: NSF Cost Sharing Policies for a Robust Federal Research Enterprise

Executive Summary

Science and engineering research and education are cornerstones of the U.S. science and technology enterprise. Following World War II, the National Science Foundation (NSF) was established as the only Federal agency explicitly charged with helping to maintain the overall health of science and engineering across all disciplines through the provision of research and education assistance grants to colleges, universities, and other institutions.

Federally sponsored research is fundamentally a partnership between the Federal Government and institutions performing the research. Both are committed to achieving mutually beneficial outcomes, and both have demonstrated agreement to share in the costs of the enterprise. Institutions that participate in Federally sponsored research provide resources to the enterprise in a multiplicity of ways to cover direct and indirect costs associated with research activities. These resources include general-purpose state and local government appropriations applicable to research, private gifts, activities funded internally, investments in infrastructure and programs, faculty start-up packages, mandatory and voluntary cost sharing, costs of implementing unfunded research compliance mandates, and unrecovered indirect costs. The portion of institutional resources termed "cost sharing" refers to costs of a specific Federally sponsored project or program that are not borne by the Federal Government.[3,*] Cost sharing includes mandatory cost sharing, voluntary committed cost sharing, and voluntary uncommitted cost sharing provided to specific projects, and also unrecovered indirect costs associated with Federally sponsored research projects.

The application of mandatory cost sharing requirements, and consideration of both mandatory and voluntary committed cost sharing in the NSF merit review and award decision processes, are governed by NSF cost sharing policy. In recent years, NSF has attempted to clarify the role of mandatory cost sharing in NSF-sponsored research and to ensure that voluntary committed cost sharing plays no role in NSF award decisions.

In this report, the National Science Board (Board) prescribes a set of recommendations with two primary objectives: (1) to allow, but narrowly circumscribe, the application of mandatory cost sharing requirements in NSF programs in which cost sharing is foundational to achieving programmatic goals, and (2) to prohibit voluntary committed cost sharing in NSF proposals and thus eliminate post-award tracking and reporting requirements associated with such cost sharing. These recommendations are intended to improve consistency and clarity of NSF cost sharing practices and policy and to maximize the effectiveness of institutional dollars invested in research. The Board firmly believes that prohibiting voluntary committed cost sharing, and permitting mandatory cost sharing requirements only in limited and appropriate circumstances, will not reduce institutional commitment and financial contributions to NSF-sponsored projects or negatively impact institutional stewardship of Federal resources. Instead, it likely will enhance the ability of institutions to strategically and flexibly plan, invest in, and conduct research projects and programs, and will promote equity among grantee institutions in NSF funding competitions.

* The Board believes the term "cost sharing" inappropriately suggests that the value of shared participation in the research enterprise – by Federal agencies providing funding and institutions conducting the work – is limited to financial dimensions alone.

Introduction

Science and engineering research and education are cornerstones of the U.S. science and technology enterprise. Over the Nation's history, research and innovation have generated new technologies and industries, improved quality of life, and promoted economic prosperity. The Federal Government has long recognized the need to provide public support for the science and engineering research enterprise. Following World War II, the National Science Foundation (NSF) was established as the only Federal agency explicitly charged with helping to maintain the overall health of science and engineering across all disciplines through the provision of research and education assistance grants to colleges, universities, and other institutions.

Federally sponsored research is fundamentally a partnership between the Federal Government and the institutions performing the research. As the National Science and Technology Council observed in its April 1999 report, *Renewing the Federal Government-University Research Partnership for the 21st Century*, this partnership in the conduct of research "has yielded benefits that are vital to each [partner]. It continues to prove exceptionally productive, improving the quality of life, educating the next generation of scientists and engineers, and contributing to America's economic prosperity."[4] Each partner is uniquely suited to providing necessary elements for the success of the enterprise: the Federal Government provides funding for and a system through which to select the most meritorious basic science and engineering research ideas, and colleges, universities, and other institutions provide the intellectual resources of their researchers. Both partners are committed to achieving mutually beneficial outcomes, and both have demonstrated agreement to share in the costs of the enterprise.

Overview of Cost Sharing

Institutions that participate in Federally sponsored research provide resources to the enterprise in a multiplicity of ways to cover direct and indirect costs associated with research activities. These include, but are not limited to, general-purpose state and local government appropriations applicable to research, private gifts, activities funded internally, investments in infrastructure and programs, faculty start-up packages, mandatory and voluntary cost sharing, costs of implementing unfunded research compliance mandates, and unrecovered indirect costs. In total, academic institutions contributed about 20 percent of total research and development expenditures at U.S. colleges and universities in FY 2007.[5] The portion of institutional resources termed "cost sharing" refers to costs of a specific Federally sponsored project or program that are not borne by the Federal Government.[6] Cost sharing includes mandatory cost sharing, voluntary committed cost sharing, and voluntary uncommitted cost sharing provided to specific projects, and also unrecovered indirect costs associated with Federally sponsored research projects.

- *Mandatory Cost Sharing*: Institutional resources required by NSF for specific sponsored projects, usually with different requirements for different programs and solicitations. At NSF, mandatory cost sharing requirements outside of the statutory one percent requirement (eliminated in June 2007) have not been implemented for unsolicited proposals.

- *Voluntary Cost Sharing*: Institutional resources made available to a specific sponsored project solely at the discretion of the grantee institution. These resources fall into two categories:

– *Voluntary Committed Cost Sharing*: Institutional voluntary cost sharing resources that are pledged formally in an NSF proposal and that become binding and auditable commitments to that sponsored project upon award of the grant. These commitments may be articulated in numerous places in NSF proposals, including in the narrative, letters of support, or budget (e.g., faculty requesting zero salary support from NSF for time contributed to the project).

– *Voluntary Uncommitted Cost Sharing*: Institutional voluntary cost sharing resources that are not pledged formally in an NSF proposal but are subsequently made available upon receipt of the award. Institutions are not bound to contribute such resources, and the resources are not auditable.

- *Unrecovered Indirect Costs*: Although not formally termed "cost sharing", unrecovered indirect costs associated with NSF-sponsored research constitute real costs of conducting research that must be borne by grantee institutions.[7] Indirect costs for NSF-sponsored projects are determined by applying the current institutional indirect cost rate, as negotiated between the grantee institution and cognizant Federal agency, to the modified total direct costs of the project.[8] Indirect costs consist of both facilities (F) and administrative (A) components, known in combination as F&A. Currently, grantee institutions performing NSF-sponsored projects can recover a maximum of 26 percent of administrative costs, per OMB Circular A-21.[9] This cap was established in 1991, and all administrative costs incurred above it represent *de facto* mandatory cost sharing because they must be absorbed by grantee institutions.

Recent NSF Cost Sharing Policy

The application of mandatory cost sharing, and consideration of both mandatory and voluntary committed cost sharing in the NSF merit review and award decision processes, are governed by NSF cost sharing policy. Several important recent revisions to NSF cost sharing policy have attempted to clarify the role of mandatory cost sharing in NSF-sponsored research, and to ensure that voluntary committed cost sharing plays no role in NSF award decisions. See Appendix C for an abridged history of Federal and NSF cost sharing policies.

In 1999, the Board issued a cost sharing policy statement (NSB-99-92) clarifying the following expectations for mandatory cost sharing: (1) mandatory cost sharing is an eligibility, not a review, criterion; (2) NSF cost sharing requirements beyond the statutory one percent requirement will be clearly stated in the program solicitation; (3) only statutory cost sharing will be required for unsolicited proposals;[10] and (4) any post-review, pre-award budget reduction of 10 percent or more from the amount proposed should be accompanied by a corresponding reduction in the scope of the project, unless the program officer, principal investigator, and institution clearly agree that the project as proposed can be carried out at a lesser level of support from NSF with no expectation of any uncompensated institutional contribution beyond that formally reflected as cost sharing. The policy was intended to enhance consistency in the application of mandatory cost sharing requirements in NSF programs, including the prevention of any consideration of mandatory cost sharing for proposal evaluation and decision purposes and the elimination of all instances of cost sharing compelled by post-review reductions in NSF project budgets.

In 2002, the Board revised its cost sharing policy statement to clarify enforcement of the provisions of the 1999 cost sharing policy statement regarding budget negotiations. The Board issued a new cost sharing policy statement (NSB-02-188), stating that in budget negotiations, any reduction of 10 percent or more from the amount proposed should be accompanied by a corresponding reduction in the scope of the project.

In 2004, the Board approved a revision to NSF cost sharing policy that eliminated mandatory cost sharing requirements in all NSF programs. This policy revision superseded previous guidance regarding mandatory cost sharing requirements and had numerous positive consequences for both NSF and grantee institutions. Further, it aligned NSF cost sharing practices with those of other Federal funding agencies.[11]

Historically, in accordance with Congressional requirements, NSF required that each grantee share in the cost of NSF research projects resulting from unsolicited proposals.[12] The 2004 revision to NSF cost sharing policy did not impact the statutory cost sharing requirement. This requirement was eliminated for awards made on or after June 1, 2007, by removal of the Congressional requirement from NSF appropriations language.

The elimination of mandatory cost sharing requirements was intended to make certain that mandatory cost sharing would not be considered during the NSF merit review and award decision processes; to remove eligibility barriers to participation in certain NSF programs by institutions unable to provide the required cost sharing; and to eliminate the lack of uniformity in cost sharing requirements and philosophy of use across NSF programs. Also, it reduced the financial burden on institutions to provide mandatory cost sharing, provided institutions with more flexibility to strategically invest their own resources, and eliminated the administrative burden associated with tracking and reporting mandatory cost sharing.

However, the 2004 policy revision also may have brought about several potentially negative consequences for certain types of NSF programs that had previously required mandatory cost sharing and depended upon it to achieve programmatic objectives (e.g., those based on university-industry partnerships or the development of large-scale, long-term research programs). Potential impacts on these programs include:

- Removal of institutional leverage to garner industry participation in programs that seek to build university-industry partnerships (e.g., the Engineering Research Centers [ERC] and Industry/University Cooperative Research Centers [I/UCRC] programs);

- Generation of ambiguity in NSF programs for which institutional "participation" (inherently meaning cost sharing) remained a required component, but which could no longer require mandatory cost sharing (e.g., the Science and Technology Centers program);

- Removal of institutional leverage and incentive to ensure sustainability for large-scale, long-term research programs (e.g., large centers); and

- Removal of leverage to garner financial support for programs that involve substantial commitment to building research capacity and infrastructure (e.g., the Experimental Program to Stimulate Competitive Research [EPSCoR]).

In its February 2008 report to Congress, the Board recommended that NSF reinstate mandatory cost sharing for three programs judged to have experienced negative consequences of the 2004 policy revision: the ERC program, the I/UCRC program, and EPSCoR. The Board also recommended that NSF define a set of overarching principles to guide the application of mandatory cost sharing requirements, and implement such requirements in other programs in the future as justified by those principles. In addition to directing the Board to evaluate its 2004 policy revision, the America COMPETES Act (P.L. 110-69) also implemented mandatory cost sharing in the Major Research Instrumentation Program and the Robert Noyce Teacher Scholarship Program.

Voluntary committed cost sharing is addressed in the Grant Proposal Guide (GPG) of the NSF Proposal and Award Policies and Procedures Guide.[13] The GPG states that NSF has no expectation for proposals to include voluntary committed cost sharing. Institutions may offer voluntary committed cost sharing in their proposals at their own discretion, but such offers will not be a factor in NSF's decision to make an award, and they will become binding and auditable resource commitments upon award of the grant. These offers include any cost sharing offered above the required eligibility amount in proposals submitted to NSF programs that implement mandatory cost sharing.

Cost sharing resources may be articulated on Line M or in a multiplicity of other locations in NSF proposals, and can *potentially* enter into consideration during the NSF merit review and award decision processes at three times: pre-award (to establish eligibility to participate in a given funding competition), during the merit review process, or during award budget negotiation. The only allowable consideration of cost sharing during these processes, however, is verification of mandatory cost sharing for eligibility purposes during the pre-award phase. NSF instructs its program officers and reviewers that voluntary committed cost sharing is not to be considered during the merit review process, and the agency has no formal method by which to account for or evaluate such offers.

Views on Cost Sharing

Throughout NSF's history, cost sharing has been the subject of debate. Continuing problems include consistency of cost sharing practices, clarity in cost sharing policies, ensuring that cost sharing is applied only in appropriate circumstances, separation of cost sharing from NSF merit review and award decision processes, increasing financial pressures on institutions, and administrative requirements associated with cost sharing contributions. It is important to appreciate the variety of stakeholder perspectives in order to understand the recommendations made herein as well as their associated rationales.

Sponsoring Agency Perspectives

Cost sharing is generally perceived by sponsoring agencies to be both a demonstration of institutions' commitment to their Federally sponsored projects and a means of increasing the number of investigators funded and the size and/or time-scale of large projects that would be unachievable if only Federal funds were available. Sponsoring agencies may seek cost sharing from grantee institutions because, for example:

- certain equipment items may be multi-purpose or multi-user or have durations of use that extend beyond a particular project;
- certain types of projects, especially centers, are viewed as partnerships between the agency and the institution(s);
- research is considered a fundamental part of institutional mission;
- cost sharing commitments require institutions to establish priorities; and
- cost sharing can leverage or stretch an agency's funds.[14]

The Board and numerous advisory bodies have noted the importance of ensuring that grantee institutions are required to contribute cost sharing only in cases in which it is deemed appropriate and in the interest of both the sponsoring agency and grantee institution. These cases may include those in which the sponsored projects generate tangible benefit (e.g., revenue or infrastructure to be used beyond the scope or duration of the NSF award) for the grantee institution.[15] Mandatory cost sharing requirements have been rationalized by a variety of programmatic objectives related to this outcome, including: capacity-building, linkages with industry, procurement or support for facilities or permanent equipment, and long-term project sustainability. These objectives have been deemed appropriate rationales for requiring mandatory cost sharing because they may help institutions build research capacity and improve competitiveness in future Federal research funding competitions.[16]

Institutional Perspectives

Institutions participating in the Federally sponsored research enterprise hold a variety of views on cost sharing. Mandatory cost sharing generally is perceived by grantee institutions to be appropriate in certain limited circumstances (e.g., when aligned with programmatic objectives and intended to assist institutions in building long-term and/or large-scale projects). However, voluntary committed cost sharing has more tenuous implications, including its perceived impact on both proposal competitiveness and institutional equity in NSF funding competitions. Also of concern is its impact on institutional strategic planning and flexibility in expending research resources, as well as its impact on indirect cost recovery and its associated administrative requirements.

- *Impact on Proposal Competitiveness and Institutional Equity.* The proposer community generally views offers of voluntary committed cost sharing in proposals as increasing their competitiveness (i.e., likelihood of receiving funding) in NSF funding competitions. Correspondingly, failing to offer significant voluntary committed cost sharing in proposals is viewed as creating a competitive disadvantage. These views are widespread and strong among proposers even though NSF instructs program officers, reviewers, and the proposer community that voluntary committed cost sharing is not to be a factor in the merit review and award decision processes. Additionally, a few proposers noted that voluntary committed cost sharing gives them leverage within their institutions to obtain resources to build their research groups and laboratories.

- *Impact on Institutional Strategic Planning and Financial Flexibility.* Grantee institutions typically understand the value of shared financial commitment to Federally sponsored research and have invested in building research capacity and infrastructure, and developed strategic research plans. However, they are reticent to commit voluntary cost sharing to specific projects because doing so limits their flexibility in strategically expending limited institutional resources, and because they are required to adhere to specific grant conditions and plans for delivering cost sharing commitments.

- *Impact on Indirect Cost Recovery.* Voluntary committed cost sharing has a two-fold impact on the recovery of indirect costs associated with NSF-sponsored projects by grantee institutions. First, institutions currently are unable to recover indirect costs associated with voluntary committed cost sharing. Additionally, their overall indirect cost recovery is reduced because voluntary committed cost sharing is included in an institution's organized research base for indirect cost rate calculation.

- *Associated Administrative Requirements.* Grantee institutions are required to track and report all voluntary committed cost sharing contributions in addition to complying with institutional financial reporting requirements. The accurate and complete identification of voluntary committed cost sharing is an important concern of sponsored research officers and research administrators at grantee institutions because the commitments are binding and auditable upon receipt of the award.

RECOMMENDATIONS*

Recommendation 1

NSF should define and communicate, both internally and externally, a set of overarching principles to guide the limited application of mandatory cost sharing in NSF programs. NSF may implement mandatory cost sharing in individual programs where deemed appropriate according to established principles. Mandatory cost sharing should be applied to only a small fraction of NSF programs, and all mandatory cost sharing requirements must be subject to approval by the NSF Director.[17]

Mandatory cost sharing represents an appropriate eligibility requirement placed upon proposing institutions or jurisdictions for certain competitive grants for which non-Federal financial support and commitment are considered foundational to program success. Factors that may justify the inclusion of programmatic mandatory cost sharing requirements include, but are not limited to, capacity-building, linkages with industry, procurement or support for facilities or permanent equipment, and long-term sustainability. The Board believes that mandatory cost sharing requirements should be the exception rather than the rule.

Recommendation 2

NSF should continue its current practice of not requiring mandatory cost sharing in unsolicited proposals.

Historically, mandatory cost sharing for unsolicited proposals was required only in the form of statutory cost sharing. Prior to June 1, 2007, recipients of awards resulting from unsolicited proposals were required to contribute a minimum of one percent of the costs of the project or one percent of the aggregate costs of all NSF-sponsored projects at their institutions subject to the statutory requirement. The statutory cost sharing requirement was eliminated effective with awards made on or after June 1, 2007.[18] Additional mandatory cost sharing requirements have never been considered appropriate for unsolicited proposals, largely because NSF funding for awards generated from unsolicited proposals is intended to be sufficient to achieve project objectives.

Recommendation 3

NSF should enhance its training of program officers to avoid unintended implicit or explicit requests for voluntary committed cost sharing during the budget negotiation process, and to ensure consistent application of NSF cost sharing policy.

NSF program officers are exceptionally skilled in managing the merit review process to ensure that the research supported by NSF lies at the frontier of knowledge. They also, like the proposers with whom they negotiate, are resourceful and entrepreneurial in their attempts to ensure maximum effectiveness of the Federal dollars available. During the budget negotiation process, tradeoffs frequently are made between budget size and scope of work. In some instances, funding from institutions may be available to redress shortfalls in NSF funding to maintain the original work plan. However, such funding should not be sought, implicitly or explicitly, by NSF program officers during the budget negotiation processes.

---

* Recommendations 1, 3, 5, and 8 are derived and expanded upon from the Board's February 2008 report to Congress on NSF cost sharing policy, *Report to Congress on Cost Sharing Policies at the National Science Foundation* (NSB-08-17).

Recommendation 4

In applying mandatory cost sharing, NSF programs should continue to exercise discretion in setting requirements that take into account the diverse attributes of institutions (e.g., size, research intensity, character/mission) so long as the requirements and rationale are clearly identified in program solicitations and are consistent with the principles developed by NSF in response to Recommendation 1. NSF should avoid creating NSF-wide special exemptions from cost sharing, or tiered cost sharing requirements, applicable to all programs for specific types of institutions. In all cases, NSF should continue to emphasize that merit review is founded on the quality of the work to be performed, with mandatory cost sharing (where applicable) serving only as an eligibility, not a merit review, requirement.

Broadening the participation of diverse individuals and institutions in the science and engineering research and education enterprise is a primary goal for NSF. The Board recognizes that mandatory cost sharing requirements can pose financial obstacles to the participation of certain types of institutions.

Historically, on a program-by-program basis, NSF exercised discretion in setting different mandatory cost sharing requirements for different broad categories of institutions (e.g., different requirements for Ph.D.- and non-Ph.D.-granting institutions participating in the same program). NSF should continue to provide its programs with such flexibility consistent with program goals and expected outcomes. This may help mitigate concern in the research community that mandatory cost sharing requirements act as barriers to participation in certain NSF funding competitions. All types of mandatory cost sharing requirements must be approved by the NSF Director prior to implementation and serve as eligibility, not merit review, requirements.

Recommendation 5

NSF should reinstate mandatory cost sharing for the following programs for which cost sharing is foundational to strategic programmatic goals: the Engineering Research Centers (ERC) program, the Experimental Program to Stimulate Competitive Research (ESPCoR), and the Industry/University Cooperative Research Centers (I/UCRC) program. In the case of EPSCoR, mandatory cost sharing requirements may be met in aggregate by contributions across all institutions and/or organizations in the jurisdiction. In accordance with the America COMPETES Act (P.L. 110-69), mandatory cost sharing is also implemented in the Major Research Instrumentation Program and the Robert Noyce Teacher Scholarship Program. The authority to implement mandatory cost sharing requirements in any other NSF program is granted to the NSF Director, in accordance with Recommendation 1.

The ERC, I/UCRC, and EPSCoR programs achieve one or more of the following large-scale and/or long-term strategic goals: building regional, state, or institutional capacity; creating meaningful partnerships with industry; promoting the sustainability of projects beyond NSF funding; and encouraging technology transfer for local economic development. The Board determined that the 2004 removal of mandatory cost sharing hampered the ability of these programs to achieve their strategic goals and, in some cases, virtually eliminated the incentive for participation by industry.

The Board recognizes that for certain NSF programs, financial participation by industry more appropriately takes the form of fees, sometimes after the award has been made. The Board's analysis found that the acquisition of financial resources through industry participation fees (as an analogue to cost sharing) tends to provide greater strategic flexibility to principal investigators and, in some cases, may increase the incentive for industry participation.[19] The use of such fees as cost sharing, as well as the percentage of cost sharing or fees, should be determined on a program-by-program basis relative to the specific goals to be achieved.

The Board also recognizes that some NSF programs (e.g., EPSCoR, ERC, and I/UCRC) involve multiple sub-awards or organizations that collaborate in partnerships. For these programs, mandatory cost sharing requirements can be met by the prime awardee, sub-awardees, and/or participating organizations in aggregate across the array of activities funded by a particular award. Each individual sub-awardee or participating organization need not meet a specific percentage or a proportionate amount of mandatory cost sharing, as long as the total percentage or amount required by NSF is met in aggregate by all the organizations involved in the particular funded project or activity.

Recommendation 6

NSF should prohibit voluntary committed cost sharing in all components of both solicited and unsolicited proposals. To ensure that reviewers, NSF program officers, and grantee officials have sufficient information regarding investigator capabilities and institutional resources, NSF should broaden the intent and usage of the existing Facilities, Equipment, and Other Resources (FER) section of proposals. Specifically, the FER section should contain a comprehensive description of all resources necessary for and available to a project, without reference to cost, date of acquisition, and whether the resources are currently available or would be provided upon receipt of the grant. The prohibition of voluntary committed cost sharing will eliminate tracking and reporting requirements, imposed externally on institutions, previously associated with such resources. In recognition of the culture shift in the research community necessitated by this change, NSF should clearly and regularly communicate this new policy to program officers, external reviewers, and the proposer community.

Voluntary committed cost sharing poses one of the most challenging and complex problems to institutions receiving NSF grants. The offering of such cost sharing in NSF proposals is perceived to have a number of detrimental impacts. Although no quantitative analysis is available,[20] information gathered by the Board for the preparation of this report—including substantial input from the research community[21]—suggests the following:

- First, voluntary committed cost sharing can foster unequal competitiveness among grantee institutions based on their ability and willingness to contribute cost sharing resources to NSF-sponsored projects. The research community has long expressed concern about inequities among institutions in NSF funding competitions,[22] and this issue was a primary motivator behind the Board's decision to eliminate mandatory cost sharing in all NSF programs in 2004.

- Second, offering voluntary committed cost sharing in NSF proposals is viewed as increasing institutional competitiveness in the NSF merit review and award decision processes, both in convincing external reviewers of proposers' capability to complete the work described and in pre-award budget negotiations with NSF program officers. This notion exists even though NSF exercises great care in training its program officers and external reviewers and preventing cost sharing information from being considered during the merit review process. Because program officers and external reviewers are required to make informed judgments about the ability of an investigator, a team of investigators, or an institution to carry out the proposed work, and because such judgments inherently require information about personnel and institutional capability, capacity, and commitment, the influence of cost sharing is difficult to remove entirely from the merit review process, especially when program officers and reviewers want to stretch program research dollars. Currently, NSF requests that proposers describe the organizational resources available to perform the proposed effort in the Facilities, Equipment, and Other Resources (FER) section of proposals, but proposers may also articulate resource commitments in numerous other places, including in the narrative, letters of support, or budget (e.g., faculty claiming zero salary support from NSF for time contributed to the project). Any of these discussions may reference or be perceived to be offers of voluntary committed cost sharing, quite frequently without prior knowledge of or approval by cognizant institutional representatives.

The Board suggests broadening the intent and usage of the FER section of NSF proposals to shift all description of resources available to a project to that single section, as opposed to having the description appear in a multiplicity of locations throughout proposals. Within the revised FER section, proposers would be asked to describe all resources (both physical and personnel) necessary for and available to a project, without reference to cost, date of acquisition, and whether they are currently available or would be provided upon receipt of the grant. The Board believes these changes will accomplish at least three objectives: (1) provide more space in the body of the proposal for describing the project, (2) reduce views among proposers that inclusion of voluntary cost sharing will improve proposal competitiveness, and (3) facilitate evaluation of resources available to the project by both external reviewers and institutional sponsored programs officials by confining all related information to one proposal section.

- Third, voluntary committed cost sharing generates financial and administrative burdens for institutions in at least three ways: (1) institutions currently are unable to recover indirect costs associated with voluntary committed cost sharing, (2) institutions' overall indirect cost recovery is reduced because voluntary committed cost sharing is included in an institution's organized research base for indirect cost rate calculation, and (3) institutions are required to track and report voluntary committed cost sharing, in accordance with OMB Circular A-110 (2 CFR § 215.23).

The Board firmly believes that prohibiting voluntary committed cost sharing in all solicited and unsolicited proposals will not reduce institutional contributions to Federally sponsored research activities. The Board recognizes that grantee institutions (especially universities) contribute significant resources to the Federally sponsored basic research enterprise,[23] and that they generally are committed to developing strategic plans for building research infrastructure and capacity and to investing appropriate resources in those endeavors. Voluntary committed cost sharing may represent only marginal contributions as compared to the overall institutional contribution to Federally sponsored research activities, and restrictions on the timing and usage of those committed resources may not allow them to be expended in the most effective manner possible. The Board believes that prohibiting voluntary committed cost sharing in all solicited and unsolicited proposals will afford grantee institutions maximum flexibility in expending their discretionary resources on research activities and will generate greater equity among grantee institutions.

The Board also recognizes the critical necessity of ensuring that both NSF and grantee institutions act as excellent stewards of Federal dollars awarded through NSF grants. Historically, grantee institutions have been held accountable for tracking and reporting voluntary committed cost sharing in order to ensure that they provide all resources promised during the proposal process and as one means of measuring achievement of project objectives. The Board does not believe that prohibiting voluntary committed cost sharing and eliminating the externally imposed tracking and reporting requirements will reduce grantee institutions' commitment to stewardship of Federal research dollars, because they will remain committed to investing in and achieving the goals of their sponsored projects and building their research capacity overall. Indeed, the Board believes that this change will press the Federally sponsored research enterprise to focus on the fundamental question of achievement of scientific objectives rather than on the provision of specific financial resources. NSF will continue to maintain reasonable expectations for delivery of promises made in proposals (i.e., fulfillment of grant conditions), but, as is presently the case, NSF program officers will bear responsibility for evaluating the achievement of project goals.

Recommendation 7

With the exception of programs requiring mandatory cost sharing and expectations for grantee institutions to continue the existing practice of sharing in the costs of faculty salaries, NSF should redouble its efforts to ensure that agency funding committed to programs is commensurate with the science goals to be achieved by funded projects within the program, and by the program overall.*

Information gathered by the Board for the preparation of this report made clear that the Federal funding awarded by NSF programs is often insufficient to achieve the scientific goals of sponsored research projects (i.e., a program may provide one-half the funding necessary to achieve the scientific goals stated in its solicitation, without sufficient cause for the program to require mandatory cost sharing). As a result, proposers feel compelled to contribute voluntary cost sharing to achieve program goals. By increasing efforts to ensure that all NSF programs not requiring mandatory cost sharing are supported with adequate funding, NSF can avoid implicitly suggesting and exacerbating the perception in the research community that voluntary cost sharing contributions are inherently required to achieve science goals.

Recommendation 8

NSF should periodically and systematically review its cost sharing policies and their impacts and report its findings to the Board.

Consonant with its periodic review of other policies and procedures, NSF should periodically and systematically review cost sharing policies and, wherever possible, use quantitative data to understand impacts and inform future changes.

---

[*] In addition, recipients of NSF grants remain subject to the provisions of OMB M-01-06, "Clarification of OMB A-21 Treatment of Voluntary Uncommitted Cost Sharing and Tuition Remission Costs," regarding requirements for committing and tracking "some level" of faculty (or senior researcher) effort as part of the organized research base.

Other Findings and Recommendations

In conducting this study, the Board recognized the need to address two critical issues related to cost sharing and the provision of institutional resources to the basic science and engineering research enterprise: (1) current practices among other Federal agencies or individual officials encouraging grantee institutions to reduce or waive their reimbursement for indirect costs associated with competitive research grants, and (2) Federal policies governing the reimbursement of F&A costs.[24]

Ensuring the continued financial vitality of the Federally sponsored research enterprise—and more fundamentally, the bedrock of U.S. scientific and economic advancement and competitiveness—depends largely upon maintaining robust funding sources, appropriate allocation of the financial burden, and innovative strategies for future investment. That important goal is jeopardized first by the practice of some Federal agencies or individual officials of bidding down or forcing waivers of indirect costs on competitive research awards for which universities typically would be entitled to appropriate indirect cost reimbursement. As noted previously, indirect costs represent real costs to institutions involved in Federally sponsored research. The recommendations made in this report are intended to ensure that NSF requires institutions to share in the costs of Federally sponsored research only in appropriate circumstances, which typically do not include waivers of all or significant portions of indirect costs. The Board urges other Federal agencies and other policy-making entities to follow this lead.

Second, evaluation of Federal policies governing the reimbursement of indirect costs associated with Federal research grants was raised to a priority level when Congress directed the Comptroller General to conduct a review of existing policies and procedures for F&A reimbursement for indirect costs associated with Department of Defense (DoD) research grants to institutions of higher education.[25] Among the specific provisions of this directive are the following:

- assess trends in negotiated F&A rates and effective (based on actual reimbursement) F&A rates for universities that receive DoD extramural research grants and contracts; and
- assess the impact to F&A costs as a result of increased Federal regulations such as environmental, security, and visa issues, assess trends in actual payments by the Department of Defense for direct and indirect costs on DoD extramural research grants.[26]

The Board sees value in and recommends that further research be undertaken in a variety of analyses of the economics of publicly funded research. For example, a Federal Government-wide study of the current finances of the Federally sponsored research enterprise could be undertaken, including study of the F&A costs associated with Federally sponsored research and evaluation of the current 26 percent administrative rate reimbursement cap established in OMB Circular A-21. As previously stated in this report, grantee institutions share in the costs of Federally sponsored projects in part by absorbing indirect costs incurred above the cap. The Board understands the fundamental intent of the administrative rate reimbursement cap—to ensure that the majority of research funding supports direct research effort, rather than administrative costs—but also concurs with the general view of the research community that the current 26 percent reimbursement cap requires re-evaluation.

The 26 percent reimbursement cap was established based on data reflecting average administrative costs at universities prior to 1991.[27] The cap does not account for increases in administrative costs since 1991 or the costs of compliance associated with the increasing number of Federal, state, and local laws and regulations regarding the conduct of research. These laws and regulations include unfunded mandates concerning animal care, lab and hazardous waste safety, protection of human subjects, electronic research administration, effort reporting, data security, conflict of interest, research misconduct, export controls, occupational safety, and the education programs required to ensure a campus-wide knowledge base.[28] Most universities incur F&A expenses above their reimbursable amount,[29] effectively requiring university "cost sharing" of all new administrative and compliance costs. The Board forsees with significant concern the potential future consequences of the continuing financial pressure of the current F&A reimbursement cap on institutions of higher education involved in Federally sponsored research.

Conclusion

The Board believes the recommendations suggested herein will improve the consistency and clarity of NSF cost sharing practices and policy, but recognizes that a sustained effort will be needed at NSF and in the research community to adapt to the prohibition of voluntary committed cost sharing. The Board hopes these changes will be seen not as an obstacle, but rather as an opportunity to reaffirm and bolster the sense of partnership and mutual commitment between NSF and grantee institutions in pursuing scientific discovery. Prohibiting voluntary committed cost sharing, and permitting mandatory cost sharing requirements only in limited and appropriate circumstances, is not expected to reduce institutional commitment and financial contributions to NSF-sponsored projects or to negatively impact institutional stewardship of Federal resources. Instead, it likely will enhance the ability of institutions to strategically and flexibly plan, invest in, and conduct research projects and programs, and will promote equity among grantee institutions in NSF funding competitions. Ultimately, these changes are intended to refocus the measurement of accountability in NSF-sponsored research to achievement of research objectives, rather than the provision of financial resources.

Endnotes

[1] National Science Board, Committee on Strategy and Budget, Charge to the Task Force on Cost Sharing, October 9, 2007 (NSB-07-110, Revised July 15, 2008).

[2] Mandatory cost sharing for unsolicited proposals has been required only in the form of statutory cost sharing, and statutory cost sharing was eliminated for awards made on or after June 1, 2007. Prior to June 1, 2007, recipients of awards resulting from unsolicited proposals were required to contribute a minimum of one percent of the costs of the project or one percent of the aggregate costs of all NSF-sponsored projects at their institutions subject to the statutory requirement. This statutory requirement was included as part of NSF's annual appropriations bills, when NSF was under the jurisdiction of the Veterans Affairs, Housing and Urban Development (VA-HUD), and Independent Agencies Subcommittee in the U.S. House of Representatives and U.S. Senate. In February and March 2005, respectively, NSF was placed under the jurisdiction of the Subcommittee on Science, State, Justice, and Commerce in the U.S. House of Representatives and the Commerce, Justice, and Science Subcommittee in the U.S. Senate after major restructuring of both the U.S. House and Senate appropriations committees for the 109th Congress. References to statutory cost sharing requirements for unsolicited NSF proposals were dropped from subsequent NSF appropriations bills.

[3] Office of Management and Budget, Circular A-110, "Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations."

[4] National Science and Technology Council, "Renewing the Federal Government-University Research Partnership for the 21st Century," April 1999.

[5] In FY 2007, the Federal Government contributed about 61.5 percent and academic institutions contributed about 19.5 percent of total R&D expenditures at U.S. universities and colleges. *Survey of Research and Development Expenditures at University and Colleges*, National Science Foundation/Division of Science Resources Statistics. Available at: http://www.nsf.gov/statistics/infbrief/nsf08320/#tab1.

[6] Office of Management and Budget, Circular A-110, "Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations."

[7] Unrecovered indirect costs were in fact the genesis of "cost sharing" in Federally sponsored research—limitations on indirect cost recovery were first implemented in the 1950s. Various laws and regulations governing indirect cost recovery on Federal research grants have been implemented by the U.S. Congress and the Office of Management and Budget since that time.

[8] National Science Foundation, *Proposal and Award Policies and Procedures Guide*, January 5, 2009. Generally, institutions receiving NSF grants negotiate indirect cost rates with the U.S. Department of Health and Human Services.

[9] Office of Management and Budget, Circular A-21, "Cost Principles for Educational Institutions."

[10] This statutory requirement was subsequently removed from NSF appropriations bills in FY 2007.

[11] Cost sharing is generally not required for grants funded by the National Institutes of Health (NIH), the National Aeronautics and Space Administration (NASA), and the Office of Science at the Department of Energy (DOE).

[12] Prior to June 1, 2007, recipients of awards resulting from unsolicited proposals were required to contribute a minimum of one percent of the costs of the project or one percent of the aggregate costs of all NSF-sponsored projects at their institutions subject to the statutory requirement. This statutory requirement was included as part of NSF's annual appropriations bills, when under the jurisdiction of the VA-HUD and Independent Agencies Subcommittee in the U.S. House of Representatives and U.S. Senate. In February and March 2005, respectively, NSF was placed under the jurisdiction of the Subcommittee on Science, State, Justice, and Commerce in the U.S. House of Representatives and the Commerce, Justice, and Science Subcommittee in the U.S. Senate after major restructuring of both the U.S. House and Senate appropriations committees for the 109th Congress. References to statutory cost sharing requirements for unsolicited NSF proposals were dropped from subsequent NSF appropriations bills.

[13] National Science Foundation, *Proposal and Award Policies and Procedures Guide*, January 5, 2009.

[14] Feller, Irwin, *Matching Fund and Cost-Sharing Experiences of U.S. Research Universities*, " National Council of University Research Administrators, Research Management Review, Vol. 11, Spring/Summer 2000.

[15] National Science Foundation Policy Statement of Cost Sharing (NSB-99-92), Revised June 1, 1999.

[16] National Science and Technology Council, "Renewing the Federal Government-University Research Partnership for the 21st Century," April 1999.

[17] This will occur as part of the existing routine clearance process for NSF solicitations and other funding opportunities.

[18] Prior to June 1, 2007, recipients of awards resulting from unsolicited proposals were required to contribute a minimum of one percent of the costs of the project or one percent of the aggregate costs of all NSF-sponsored projects at their institutions subject to the statutory requirement. This statutory requirement was included as part of NSF's annual appropriations bills, when under the jurisdiction of the VA-HUD and Independent Agencies Subcommittee in the U.S. House of Representatives and U.S. Senate. In February and March 2005, respectively, NSF was placed under the jurisdiction of the Subcommittee on Science, State, Justice, and Commerce in the U.S. House of Representatives and the Commerce, Justice, and Science Subcommittee in the U.S. Senate after major restructuring of both the U.S. House and Senate appropriations committees for the 109th Congress. References to statutory cost sharing requirements for unsolicited NSF proposals were dropped from subsequent NSF appropriations bills.

[19] In its review, the Board also took note of the successful industrial participation features implemented in the interagency Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)

programs, which are governed by the Small Business Administration (SBA) and administered at a number of Federal agencies, including NSF. As appropriate, NSF should identify whether the actions undertaken in implementing these unique programs can be adapted as a model for industrial participation in other NSF-supported activities.

[20] NSF does not maintain records of voluntary committed cost sharing contributed by grantee institutions to NSF-sponsored projects.

[21] Research community input on experiences related to cost sharing was solicited through a request for public comment published on the Federal Register (FR Doc. E8–18023) and publicized by an NSF Dear Colleague letter (issued on September 4, 2008).

[22] Seligman, R.P.: "An Introduction to Cost Sharing: Why Good Deeds Do Not Go Unpunished." National Council of University Research Administrators, Research Management Review, Vol. 11, Spring/Summer 2000.

[23] In FY 2007, the Federal Government contributed about 61.5 percent and academic institutions contributed about 19.5 percent of total R&D expenditures at U.S. universities and colleges. *Survey of Research and Development Expenditures at University and Colleges*, National Science Foundation/Division of Science Resources Statistics. Available at: http://www.nsf.gov/statistics/infbrief/nsf08320/#tab1.

[24] As indicated by continuing discussion and recent calls for re-evaluation of the cap by the Federal Demonstration Partnership (*A Profile of Federal-Grant Administrative Burden Among Federal Demonstration Partnership Faculty*, January 2007) and Council on Governmental Relations (Finances of Research Universities, March 2008.)

[25] House Report 110-652 accompanying the FY09 National Defense Authorization Act directed the Comptroller General to conduct this review, and the Government Accounting Office (GAO) has initiated the study.

[26] House Report 110-652 accompanying the FY09 National Defense Authorization Act.

[27] The October 1991 revision to OMB Circular A-21 that established a 26 percent cap on F&A reimbursement directly impacted (as defined as reducing university recovery of indirect costs) 69 of 140 universities surveyed in 1995 by the U.S. Government Accounting Office (GAO), may have impacted 13 additional universities, and had little or no impact on the remaining 58 universities. *University Research: Effect of Indirect Cost Revisions and Options for Future Changes*, U.S. Government Accounting Office, March 1995.

[28] List adapted from *Finances of Research Universities*, Council on Governmental Relations, March 2008.

[29] A 2006 survey of 130 member institutions of the Council on Governmental Relations indicated that more than 90 percent of research universities can support F&A rates above 26 percent, and the average uncapped administrative component would likely be over 28 percent. *2005-2006 Survey of F&A Rates, Council on Governmental Relations*, 2006.