

## MEMORANDUM TO MEMBERS OF THE NATIONAL SCIENCE BOARD

**SUBJECT:** Major Actions and Approvals at the November 30-December 1, 2005 Meeting

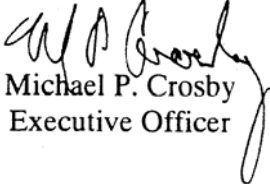
This memorandum will be made publicly available for any interested parties to review. A more detailed summary of the meeting will be posted on the National Science Board (NSB, the Board) public Web site within 10 business days. A comprehensive set of NSB-approved Open Session meeting minutes will be posted on the Board's public Web site following its February 2006 meeting.

Major actions and approvals at the 389<sup>th</sup> meeting of the Board included the following (not in priority order):

1. The Board approved the minutes of the Plenary Open Session (NSB-05-140) for the September 2005 meeting ([http://www.nsf.gov/nsb/meetings/2005/0928/open\\_min.pdf](http://www.nsf.gov/nsb/meetings/2005/0928/open_min.pdf)). Minutes for the Plenary Executive Closed and Closed Sessions for the September 2005 meeting of the NSB were also approved.
2. The Board approved the minutes of the NSB teleconference (NSB-05-157) on November 22, 2005.
3. The Board approved a resolution to close portions of the upcoming February 10, 2006 NSB meeting dealing with staff appointments; future budgets; pending proposals/awards for specific grants, contracts, or other arrangements; those portions dealing with specific Office of the Inspector General investigations and enforcement actions, or agency audit guidelines; and NSF participation in a civil or administrative action, proceeding, or arbitration (NSB-05-145) (Attachment 1).
4. The Board authorized the Director, at his discretion, to renew the existing cooperative agreement with Associated Universities, Inc., for the management and operation of the National Radio Astronomy Observatory (NRAO), over the 42-month period April 1, 2006 - September 30, 2009. If any significant changes to the budget or activities of the NRAO would likely occur as a result of recommendations of the Senior Review, the NSB will be promptly informed and, if it deems necessary, concur in the contemplated changes.
5. The Board authorized the Director, at his discretion, to make an award to the Association of Universities for Research in Astronomy, Inc., for operation of the International Gemini Observatory for 60 months (FY 2006 through FY 2010).

6. The Board approved the *National Science Board 2020 Vision for the National Science Foundation* (NSB-05-142), subject to final editing by the NSB Chairman, Dr. Warren Washington and the Board lead for the development of this document, Dr. Kathryn Sullivan.
7. The NSB Chairman announced the membership of the NSB Task Force on International Science and Engineering with Dr. Jon Strauss as chairman and Drs. Dan Arvizu, Steven Beering, Ray Bowen, Alan Leshner, Jane Lubchenco, Diana Natalicio, Kathryn Sullivan, and Warren Washington as members.
8. The Board approved a modification to the Board's process for electing the *ad hoc* Committee on Nominating for NSB Elections (Elections Committee) to allow the NSB Chairman to appoint members to the Elections Committee for Executive Committee membership elections in odd-numbered years or when one of the elected members of the Executive Committee is unable to complete his/her term of office.
9. The NSB Chairman appointed the *ad hoc* Committee on Nominating for NSB Elections, with Dr. Douglas Randall, chairman and Drs. Alan Leshner and Jo Anne Vasquez as members, to develop a list of candidates to fill the vacancy on the Executive Committee for a term ending in May 2007, created by the resignation of Dr. Delores Etter.
10. The Board approved establishment of the Committee on Programs and Plans Task Force on Hurricane Science and Engineering. The NSB Chairman appointed Drs. Kelvin Droegemeier and Kenneth Ford co-chairs, and Drs. Daniel Hastings, Elizabeth Hoffman, and Alan Leshner as members (NSB-05-167) (Attachment 2).
11. The Board approved revised Attendance Guidelines for the National Science Board and its Committees and other Subdivisions (NSB-05-161) (Attachment 3).
12. The Board approved the NSB Guidance for NSF Centers Programs, as amended (NSB-05-166) (Attachment 4).
13. The Board approved the transmittal letter and NSF management response to the Office of Inspector General, *Semiannual Report to the Congress*, September 2005.
14. The Board concurred that the Advanced Technology Solar Telescope (ATST) has attained Readiness Stage status by the appropriate process as described in *Setting Priorities for Large Research Facilities Projects Supported by the NSF* (NSB-05-77).

15. The Board approved a letter from the NSB Chairman to the IBM Foundation President, commending the IBM Corporation for its efforts in addressing U.S. education in science, mathematics, engineering, and technology by enabling qualified employees to explore career changes to precollege teaching.



Michael P. Crosby  
Executive Officer

- Attachment 1: [NSB-05-145](#)
- Attachment 2: [NSB-05-167](#)
- Attachment 3: [NSB-05-161](#)
- Attachment 4: [NSB-05-166](#)

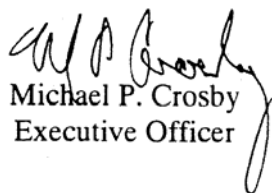
**MEMORANDUM TO MEMBERS OF THE NATIONAL SCIENCE BOARD**

**SUBJECT:** Closed Session Agenda Items for February 9-10, 2006 Meeting

The Government in the Sunshine Act requires formal action on closing portions of each Board meeting. The following are the closed session agenda items anticipated for the February 9-10, 2006 meeting.

1. Staff appointments
2. Future budgets
3. Grants and contracts
4. Specific Office of Inspector General investigations and enforcement actions
5. NSF participation in a civil or administrative action, proceeding, or arbitration

A proposed resolution and the General Counsel's certification for closing these portions of the meetings are attached for your consideration.

  
Michael P. Crosby  
Executive Officer

Attachments

PROPOSED  
RESOLUTION  
TO CLOSE PORTIONS OF  
390th MEETING  
NATIONAL SCIENCE BOARD

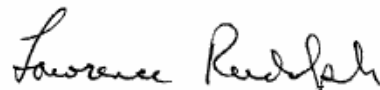
RESOLVED: That the following portions of the meeting of the National Science Board (NSB) scheduled for February 9-10, 2006 shall be closed to the public.

1. Those portions having to do with discussions regarding nominees for appointments as National Science Board members and National Science Foundation (NSF) staff appointments, or with specific staffing or personnel issues involving identifiable individuals. An open meeting on these subjects would be likely to constitute a clearly unwarranted invasion of personal privacy.
2. Those portions having to do with budgets for a particular fiscal year not yet submitted by the President to the Congress.
3. Those portions having to do with proposals and awards for specific grants, contracts, or other arrangements. An open meeting on those portions would be likely to disclose personal information and constitute a clearly unwarranted invasion of privacy. It would also be likely to disclose research plans and other related information that are trade secrets, and commercial or financial information obtained from a person that are privileged or confidential. An open meeting would also prematurely disclose the position of the NSF on the proposals in question before final negotiations and any determination by the Director to make the awards and so would be likely to frustrate significantly the implementation of the proposed Foundation action.
4. Those portions having to do with specific Office of the Inspector General investigations and enforcement actions, or agency audit guidelines.
5. Those portions having to do with NSF participation in a civil or administrative action, proceeding, or arbitration.

The Board finds that any public interest in an open discussion of these items is outweighed by protection of the interests asserted for closing the items.

## CERTIFICATE

It is my opinion that portions of the meeting of the National Science Board (NSB) or its subdivisions scheduled for February 9-10, 2006 having to do with nominees for appointments as NSB members and National Science Foundation (NSF) staff, or with specific staffing or personnel issues or actions, may properly be closed to the public under 5 U.S.C. § 552b(c) (2) and (6); those portions having to do with budgets for a particular fiscal year may properly be closed to the public under 5 U.S.C. § 552b(c) (3) and 42 U.S.C. 1863(k); those portions having to do with proposals and awards for specific grants, contracts, or other arrangements may properly be closed to the public under 5 U.S.C. § 552b(c) (4), (6), and (9) (B); those portions disclosure of which would risk the circumvention of a statute or agency regulation under 5 U.S.C. § 552b(c) (2); and those portions having to do with specific Office of the Inspector General investigations and enforcement actions may properly be closed to the public under 5 U.S.C. § 552b(c) (5), (7) and (10).



---

Lawrence Rudolph  
General Counsel  
National Science Foundation

**Committee on Programs and Plans**  
**Charge to the Task Force on Hurricane Science and Engineering**

Statutory Basis

*"The Board shall render to the President for submission to 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." (42 U.S.C. Section 1863) SEC. 4. (j) (2); and "...the Board shall establish the policies of the Foundation, within the framework of applicable national policies as set forth by the President and the Congress." (SEC. 4.(a))*

Action Recommended

The National Science Board (NSB, the Board) should take action, in collaboration with NSF management and other organizations in the U.S. and abroad, to accomplish the following for hurricane related science and engineering research exclusive of operational decision making, organized civil response and human health issues: (a) summarize current activities, (b) identify gaps and opportunities, and (c) recommend priorities for action within a national agenda.

The Board will involve relevant Federal science agencies and appropriate organizations to produce a report and recommendations on hurricane science and engineering research for submission to the President and the Congress.

Background

The devastation resulting from hurricanes is significant and widespread, including but not limited to loss of life, dislocation and destruction of families, and economic consequences having national reach and lasting impact. Despite this enormous tragedy, it is important to note that severe, hurricane-related loss of life and property are by no means unique to this year. Given that 90 percent of the U.S. population lives within 200 miles of a coastline, and that the built infrastructure in these regions continues to expand, the U.S. increasingly is vulnerable to hurricanes. However, two important questions have never to our knowledge been adequately addressed: First, to what extent does the Nation understand the hurricane as an integrated science and engineering problem? Second, how can such understanding be used to improve the Nation's ability to predict, mitigate and react? The relevance of these questions transcends U.S. borders as numerous other nations routinely deal with hurricanes and typhoons.

It is appropriate for the National Science Board to engage a multi-agency, multi-disciplinary dialog aimed at answering elements of the questions posed above. This effort is intended to focus on the "hurricane problem" in a more holistic manner than employed to date. Physical, social, behavioral, economic, biological, ecological, information technology and other appropriate

sciences, as well as engineering (e.g., civil, environmental, mechanical) disciplines, will be considered as part of a truly integrative approach to address *deep fundamental science questions regarding hurricanes as natural disasters*. Given its national independent advisory role to the President and Congress, the Board is uniquely and ideally suited to framing this challenge and recommending a national agenda.

The need for understanding hurricanes in a broad context is made clear when one examines hurricane-related research conducted during the past decade. For the most part it has existed as a relatively modest, loosely coordinated enterprise that encompasses topics ranging from basic research in hurricane dynamics and atmospheric and hydrologic numerical prediction to human behavior and economic impacts. Although the quality of this research is quite high, much of it is performed within the boundaries of traditional disciplines whereas in reality, the hurricane is an exemplar multidisciplinary integrative problem.

Recent events have shown us that, although the U.S. possesses the most powerful research enterprise, the largest economy, and the most sophisticated societal infrastructure in the world, it remains notably vulnerable to natural hazards. Future land-falling hurricanes of tremendous destructive potential are inevitable. Thus, the research community owes to its fellow citizens – in this and future generations – a serious effort to maximize scientific understanding of hurricanes and ensure its effective application for the protection of life and property.

### Objectives

The *ad hoc* Task Group on Hurricane Science and Engineering recommends that the Board approve the creation of a formal Task Force on Hurricane Science and Engineering (HSE) under the NSB Committee on Programs and Plans (CPP). The HSE Task Force will use a broad-based multi-disciplinary approach to summarize the current status of research relevant to understanding hurricanes as an integrated science and engineering problem. The task force will then develop recommendations to address the following issues and submit a report, through CPP, to the Board:

- Assess how increased understanding of hurricanes as natural disasters can be used to improve the Nation's ability to predict, mitigate, and react to future events.
- Recommend an integrative approach for addressing deep fundamental science questions regarding hurricanes as natural disasters.
- Recommend priorities for meeting critical research needs.
- Recommend an agenda for support of essential hurricane-related research within the Federal government and among research organizations.
- Identify a specific role for NSF to fill in addressing national needs for essential hurricane-related research.

### Logistics

The HSE Task Force will convene a series of workshops to define the challenges, frame the issues, and recommend an agenda of appropriate depth and scope. Particularly important to this task will be coordination with mission agencies (especially the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, and the



military), which conduct basic and applied research as well as provide operational infrastructures, along with but not limited to the Office of Science and Technology Policy, the National Science and Technology Council, the President's Council of Advisors on Science and Technology, the National Academies and private enterprise. The series of workshops will be held during winter and spring 2006 to address the issues identified above. The NSB Office will serve as the focal point for coordination and implementation of all task force activities.

It is anticipated that the task force will produce a final report that synthesizes the contributions from its own deliberations, workshops, and working groups, and from the activities of numerous others that are engaging similar topics from largely agency or disciplinary points of view. The report will be produced and broadly distributed during 2006. Printed copies of a final NSB report will be widely distributed and available on the NSB Web site for the public, universities, the Congress, various special interest groups, and the broad scientific community. Briefings will be given as appropriate. The task force expects to conclude its activities during 2006.

#### Milestones

September 29, 2005 – NSB establishes *ad hoc* Task Group on Hurricane Science and Engineering (HSE) under CPP.

October/November 2005 – HSE Co-chairs and NSB Executive Officer contact appropriate agencies and organizations informing them of HSE and inviting collaborative participation to enhance HSE impacts and mitigate inefficient overlap of efforts.

November 30/December 1, 2005 – *ad hoc* Task Group reports to CPP on progress and recommends creation of Task Force with formal charge.

January-May 2006 – The task force organizes workshops and series of teleconferences.

August 2006 – Draft report to CPP.

September 2006 – Final report to the Board for approval.

**National Science Board**  
*Attendance Guidelines*  
*for the National Science Board and its Committees and other Subdivisions*

**Summary of Attendance Guidelines**

The Board meets in plenary session or as committees or other subdivisions. Board Members and Board Consultants<sup>1</sup> may attend any Board meeting (unless the NSF's Designated Agency Ethics Officer determines there is a conflict of interest) and there are no restrictions on the attendance by the general public at the Board's open meetings. Attendance is limited for the Board's closed Plenary, committee, or subdivision meetings, which are designated either as 'closed' or 'executive closed.'

Open Meetings – General public, media, and NSF staff are permitted to attend.

Closed Meetings – In addition to Board Members and Board Consultants, attendance is limited to NSF staff and others needed to support the meeting discussions, including the NSB Executive Officer, the Deputy Director, Inspector General, Assistant Directors and O/D Office Heads, any staff who have prepared presentations for the closed meeting or are expected to answer questions from Board or Committee members during the closed meeting, and other staff designated by the Board Chair or Committee Chair.

Executive Closed Meetings – In addition to Board Members and Board Consultants, attendance is limited to the NSB Executive Officer, and other staff only as designated by the Board Chair or Committee Chair. The Deputy Director generally attends the Board's Executive Closed meetings except where the discussion involves Board Elections, Member proposals, or other especially sensitive matters at the discretion of the Board Chair or Committee Chair.

**Discussion of Attendance Guidelines**

**Open Meeting Attendance**

Most of the Board's meetings are open to the public, media, and NSF staff. The Board invites the general public, the media, and NSF staff to attend its open meetings.

**Closed Meeting Attendance**

The Government in the Sunshine Act permits the Board to close any portion of any meeting if it properly determines that the portion of the meeting is likely to involve specific open meeting exemptions. The Sunshine Act describes procedures that must be followed when a meeting is closed and requires the public have access to transcripts from the closed meetings (with exempted material withheld). The Board has traditionally designated two types of closed sessions: regular Closed Sessions and Executive Closed Sessions. The scope of staff attendance depends significantly upon the degree of sensitivity of the matters being discussed.<sup>2</sup>

---

<sup>1</sup> Board Consultants in this context are outgoing Board Members and Presidential Appointees to the Board not yet confirmed by the Senate.

<sup>2</sup> For closed sessions, this must always include some individual responsible for creating the transcript or electronic recording of the closed meeting as required by section (f)(1) of the Sunshine Act.

1. *Closed Sessions* are primarily devoted to the Board's consideration of proposed grants and agreements. They may also involve discussions of the NSF budget for a particular fiscal year before submission of the President's budget to Congress for that fiscal year. Board Consultants, the NSB Executive Officer, the Deputy Director, Assistant Directors and Heads of O/D Offices, and the Inspector General may routinely attend the Closed Sessions of Board and Committee meetings, unless the Chair determines otherwise. NSF staff who prepared items to be discussed by the Board or its subdivisions should normally be present during the Closed Session to make presentations or to answer questions from the Board or Committee members,<sup>3</sup> along with any other staff the Chair invites.<sup>4</sup> Such staff may attend the entirety of the closed session unless informed otherwise. The Chair may admit or exclude NSF staff as appropriate.

2. *Executive Closed Sessions* normally include discussions involving Board or Executive Committee elections, hiring or other personnel matters involving identifiable individuals, and awards to specific individuals such as Bush or Waterman awardees where there is likely to be a clearly unwarranted invasion of personal privacy, and Board Member proposals to NSF. Plenary *Executive Closed Sessions* of the full Board are normally limited to NSB Members (including the Director) and Board Consultants, the NSB Executive Officer, other staff invited by the Chair, a "court reporter," and, unless instructed otherwise, an NSB staff assistant(s) for administrative support. *Executive Closed Sessions* of Board Committees or other subdivisions will normally include Board Members, Board Consultants, the NSB Executive Officer, the Committee's Executive Secretary(ies), other staff invited by the Chair, a "court reporter," and, unless instructed otherwise, an NSB staff assistant(s) for administrative support. The Deputy Director generally attends Plenary or committee *Executive Closed Sessions*, except where the discussion involves Board Elections, Member proposals, or other especially sensitive matters at the discretion of the Board Chair or Committee Chair.

### **Procedure**

The decision on NSF staff attendance at closed NSB sessions lies with the Chair presiding over a closed meeting of the Board, its Committees, or other subdivisions.<sup>5</sup> The Chairs' decisions, if they differ from the routine attendance guidance above, should normally be made before meetings to give staff adequate notice of permitted or required staff attendance. These decisions can, however, be made or changed during the course of the meeting either to permit additional input from staff, or to exclude staff as determined by the Chair.<sup>6</sup>

Once the agenda for a closed session is final, it is the responsibility of the NSB Executive Officer or Executive Secretary for that entity to discuss attendance with the Chair. The Chair should strive to make a determination sufficiently in advance of a meeting to permit notice to staff, normally through notation on the meeting agendas. When a closed meeting begins, the Chair, with the help of the NSB Executive

---

<sup>3</sup> For proposed awards and agreements, this will normally include the Program Officer(s), the Division Director(s), and/or the Assistant Director(s). For future budgets, this may include appropriate staff from the Budget Office and/or the Office of Legislative and Public Affairs.

<sup>4</sup> The Chair may have a standing list of invitees to meetings an/or determine those admitted by meeting, or even ad hoc by agenda item, as he or she deems appropriate. Staff in some instances could include NSF contractors, experts, or consultants.

<sup>5</sup> The principles underlying the exemptions in the Government in the Sunshine Act should guide Chairs in making decisions about NSF staff attendance at closed meetings. Attendance at closed meetings may be limited as necessary to protect, e.g., personal privacy, future agency budgets, or ongoing investigations that may be discussed during a meeting. However, this will require balancing the Board's need for information, and for efficient and effective operation, with the need to protect confidentiality.

<sup>6</sup> Where the Board or a subdivision is to discuss especially sensitive issues such as, e.g., a personnel matter involving an identifiable NSF employee, the Chair may restrict staff attendance to only those essential to the discussion, and in some instances to Board members only, provided there is a means of creating the transcript or electronic recording of the closed meeting as required by section (f)(1) of the Sunshine Act.

Officer or Secretary and such others as the Chair may ask, should monitor staff presence in accordance with the meeting agenda and the Chair's decisions.

In accordance with section (f) of the Sunshine Act, the agency shall maintain a transcript of each closed meeting. The Board staff, with the advice and assistance of the NSF General Counsel and staff, shall in accordance with section (f) of the Act and section 45 CFR 614.4 of NSF regulations make a copy of transcripts available to the public upon request with portions involving the Sunshine Act's open meeting exemptions withheld.

## **National Science Board**

### **Guidance for National Science Foundation Centers Programs**

#### **Introduction/Thesis**

The National Science Foundation (NSF) is mandated with the broad responsibility that includes both the vitality of the basic research and education base in science and engineering as well as the utilization of science and engineering for the furtherance of national goals. To meet these ends, NSF must support a broad range and balance of alternative support strategies for the conduct and facilitation of research. In a constrained budgetary environment with intense and increasing competition for research dollars, the National Science Board (NSB, the Board) considers the importance of examining the relative balance within the NSF research portfolio, including NSF's investment in centers.

At the March 2005 Board meeting, Dr. Warren Washington, Chairman of the Board, asked the Committee on Programs and Plans and the Committee on Strategy and Budget to examine NSF's relative balance of center-like awards and smaller, more basic principal investigator (PI) oriented grants. At the May 2005 Board meeting, the Board received and discussed a report from NSF on the investment in centers along with other information. At the September 2005 Board meeting, the Director presented the results of a reexamination of the existing classification of awards categorized as NSF centers. Based on the existing Board guidance established in 1988, NSF substantially reduced the number of grants and agreements classified as "centers." This paper reflects the Board's view regarding NSF centers programs and has been prepared based on Board discussions.

The Board maintains that NSF's current investment in centers is appropriate. NSB strongly endorses the practice of recompeting centers, to ensure the best use of NSF funds for supporting research at the frontiers of science and engineering. One of the critical requirements for centers is to demonstrate the "value added" nature of activities expected from investing in research and education through this mode of support; in other words, research that cannot be performed by single investigators or small groups. To ensure that each center is providing this value, investments in centers should be periodically reviewed by NSF to make certain that supported centers maintain the highest levels of excellence and have not evolved into activities that should be done by single or a small group of investigator grants. A second critical requirement is to ensure the education of a diverse set of students in substantive programs related to the center's research mission in order to provide for the next generation of U.S. researchers and to prepare them for a broad set of career paths. A final critical requirement is the effective management of centers through strategic planning and implementation of proven effective management practices. This management requirement applies to both the management at the centers and within the NSF.

#### **Background**

##### Definition of Centers

NSB (1988) defined a research center as: "an organized academic research activity that receives budgetary support from sources independent of departmental allocations; occupies space with access to university operated physical facilities and support services; is directed by an administrator drawn from faculty ranks; participates in the institution's educational function, but is not degree-granting; and is more than a facilitator of research."<sup>i</sup> However, NSB (1988) recognized that the NSF's funding modes are not discrete, but rather form a continuous spectrum of activities. But for the purposes of the 1988 study, the

modes of funding support were divided into three broad, albeit artificially constructed, categories: scientific research project, facility, and research center.

As part of the FY 2007 Office of Management and Budget budget formulation process, all directorates were asked to review programs reported as centers against the criteria outlined in *Principles of National Science Foundation Research Centers*<sup>ii</sup>. Those that did not meet the stated principles were recharacterized and funding was moved to the Fundamental Science and Engineering (FS&E) investment category. As a result of this reclassification process, center programs were characterized as representing investments that enable organizations to integrate ideas, tools, and people on scales that are large enough to significantly impact important S&E fields and cross-disciplinary areas. Centers exploit opportunities in science, engineering, and technology in which the complexity of the research problem or the resources needed to solve the problem require the advantages of scope, scale, change, duration, equipment, facilities, and students that can only be provided by an academic research center.

#### Rationale for Centers

NSB (1988) cited that the use of centers was increasing because centers epitomize the growing complexity, cost, and organization of modern research. A multitude of rationale to support centers exists and generally applies in different combinations for specific centers. The following reasons were listed by NSB in its 1988 report on centers:

- Exploit opportunities in science where the complexity of the research problem can benefit from the sustained interaction among disciplines and/or subdisciplines.
- Stimulate new directions and styles of inquiry in research including collaborative, cross-disciplinary, and interdisciplinary approaches.
- Provide experimental facilities, professional staff, technical support and services, and related infrastructure support.
- Conduct research that is impossible or unfeasible under traditional support, such as research on large systems, research centered on a major experimental capability, or research requiring extensive regional coordination.
- Assist education programs of the institutions including research training and exposure to multidisciplinary approaches.
- Enhance the visibility of activity to provide a focus for interactions with the academic communities, industrial interests, and national or local government agencies.
- Respond to an identified national concern or the furtherance of specific national goals and priorities.

#### Current Board Guidance on Centers

The 1988 NSB report on centers stated, “It is the conclusion of the National Science Board that there should be no numerical targets specified for funding by any of these modes [which cover a continuous spectrum ranging from individual investigators through groups to centers], but that the balance among them should be determined by the requirements of research and education in science and engineering in accord with the purposes specified in the National Science Foundation Act...”<sup>iii</sup> The range of support for NSF centers, as defined in 1988, has been 8-12 percent of total NSF funding.<sup>iv</sup>

As NSF defined centers in FY 2004, approximately 200 NSF centers accounted for 6.7 percent of the total NSF budget, and 8.5 percent of the Research and Related Activities (R&RA) account.<sup>v</sup> This was a reduction from FY 2000, in which approximately 250 NSF centers accounted for 7.3 percent of the total budget, and 9.2 percent of the R&RA account.<sup>vi</sup> Under the 2005 revised classification of centers, in FY 2004 there would have been approximately 84 NSF centers accounting for 4.2 percent of the total NSF budget, and 5.6 percent of the R&RA account.

## New NSB Guidance

### Portfolio Balance

NSF's investment in centers should be reported as both a percentage of the R&RA account and as a percentage of the total NSF budget, with the range of support for NSF centers being 6-8 percent of R&RA. However it is important to consider that the relative balance of funding for principal investigators, large facilities, and centers will vary considerably across disciplines.

### Review Investment in Centers

The Foundation will periodically review the investment in centers to ensure that no center is being supported that has evolved into activities that could best be done by single/small group of investigator grants. To this end, centers programs (as opposed to individual centers) should be reviewed by the Board on a regular basis. While centers are an important part of the portfolio, they should not be created and supported without considerable justification on the part of NSF.

### Endorse Practice of Recompetition

NSB reaffirms its endorsement of the practice of NSF recompeting centers. In 1997, the Board affirmed its "strong support for the principle that expiring awards are to be recompeted unless it is judged to be in the best interest of U.S. science and engineering not to do so."<sup>vii</sup> Many, although not all, center awards are limited to a maximum duration – usually on the order of 10 years although subject to mid-course external peer reviews. After this time, the Board stated that continued funding requires success in open, merit-reviewed competition. Specifically regarding centers, the Board suggested that guidelines be established for the review and renewal of centers, to make the procedure as uniform and explicit as is practical. These procedures should also address the issue of phase-down of support for centers that are not renewed.<sup>viii</sup>

### Management Practices

Effective management of centers for successful research and education results is imperative to ensure the accountability of public investments. The Board endorses the implementation of proven management principles, including strategic planning, the use of strong cooperative agreements, and the commitment of ample resources for management both at the center and within the NSF.

---

<sup>i</sup> National Science Board (1988) *Report of the National Science Board Committee on Centers and Individual Investigator Awards*. February 1988. (NSB-88-35).

<sup>ii</sup> Senior Management Integration Group, June 21, 2005, *Principles of National Science Foundation Research Centers*.

<sup>iii</sup> National Science Board (1988) *Report of the National Science Board Committee on Centers and Individual Investigator Awards*. February 1998. (NSB-88-35).

<sup>iv</sup> "NSF Centers," presentation by Dr. Nathaniel Pitts, Joint Session of the Committee on Strategy and Budget and the Committee on Programs and Plans, May 25, 2005.

<sup>v</sup> NSF Office of Budget, Finance, and Award Management. Background data on the portfolio balance of centers and individual investigator support provided for the May 2005 Board meeting.

<sup>vi</sup> NSF Office of Budget, Finance, and Award Management. Background data on the portfolio balance of centers and individual investigator support provided for the May 2005 Board meeting.

<sup>vii</sup> National Science Board, Resolution on *Competition, Recompetition and Renewal of NSF Awards*. (NSB-97-224).

<sup>viii</sup> National Science Board, Statement on *Competition, Recompetition and Renewal of NSF Awards*. (NSB-97-216).