

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the December 4-5, 2012 Meeting

The major actions and approvals of the National Science Board (Board, NSB) and a preliminary summary of the proceedings at the Board's December 2012 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the December 4-5, 2012 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval. The archived webcast of the meeting is located at the following URL: <http://www.tvworldwide.com/events/nsf/121204/default.cfm>.

1. Major Actions and Approvals at the 429th NSB Meeting (not in priority order):

- a. The Board approved a draft letter to the Office of Science and Technology Policy (OSTP) regarding scientific communication and travel restrictions, subject to minor edits approved by the Chairman.
- b. The Board Chairman established the Task Force on Administrative Burdens with Dr. Arthur Bienenstock, chairman, and task force members to be determined.
- c. The Board approved a draft Charge to the Task Force on Administrative Burdens, subject to minor edits approved by the task force chairman and the Board Chairman.
- d. The Board Chairman discharged the Committee on Programs and Plans (CPP) Subcommittee on Polar Issues (SOPI) with thanks to Dr. Thomas Taylor, chairman, and members Drs. Camilla Benbow, France Córdova, Patricia Galloway, Alan Leshner, Carl Lineberger, Douglas Randall, and Robert Zimmer.
- e. The Board approved the recipients for the 2013 Vannevar Bush Award and the 2013 NSB Public Service Award. The names of the awardees will be revealed in a public announcement this spring.
- f. The Board approved the minutes of the Plenary Open Session (NSB-12-43) for the July 2012 meeting http://www.nsf.gov/nsb/meetings/2012/0717_2/minutes.pdf. Also approved were the minutes for the Plenary Executive Closed Sessions (NSB-12-30) and (NSB-12-41) and minutes for the Plenary Closed Sessions (NSB-12-42) and (NSB-12-56) for meetings and teleconferences of the Board held in July and August 2012.

[signed]
Michael L. Van Woert
Executive Officer

2. Board Chairman's Introduction and Report

Dr. Dan E. Arvizu, Chairman, announced that Dr. Arthur Bienenstock was appointed to the Board by the President in November 2012, and replaced Dr. Louis Lanzerotti for the Class of 2016.

Dr. Arvizu announced that on December 3, 2012, the President appointed the following Board Members for the Class of 2018:

- Dr. Deborah Loewenberg Ball, Dean of the School of Education, University of Michigan
- Dr. Inez Fung, Professor of Atmospheric Science, University of California, Berkeley
- Dr. G. Peter Lepage, Dean of the College of Arts and Sciences, Cornell University
- Dr. Geraldine Richmond, Professor of Chemistry and Materials Science, University of Oregon

Dr. Arvizu administered the Oath of Office to Drs. Bienenstock, Lepage, and Richmond who were present¹ at the meeting.

Dr. Arvizu asked Dr. Arthur Bienenstock to provide an update on the topic of “administrative burdens”—the burdens imposed on federally-supported researchers at U.S. post-secondary and other non-profit institutions. Dr. Arvizu established a Board Task Force on Administrative Burdens with Dr. Bienenstock as chairman. The Board approved a draft charge for the task force (NSB-12-67), subject to minor edits approved by the Board Chairman and task force chairman. (See 1.b. – 1.c.) (Attachment)

The Board approved, subject to minor edits, a draft letter from Dr. Arvizu to OSTP on scientific communication and travel restrictions in response to a memo from the Office of Management and Budget (OMB) on this subject. His letter, on behalf of the Board, indicates that additional cuts and restrictions threaten to isolate National Science Foundation (NSF) staff from the research community, make recruitment of NSF staff difficult, and endanger NSF's ability to maintain effective oversight of its investments. (See 1.a.)

Dr. Arvizu requested that NSF update the Board at an upcoming meeting on the implementation of the recommendations described in the Board report, *National Science Foundation's Merit Review Criteria, Review and Revisions* (NSB-11-86).²

Dr. Arvizu reported that the Board Office requested that the Science and Technology Policy Institute (STPI) conduct follow-up research related to its contractual support of the December 2011 Board report entitled, *Digital Research Data Sharing and Management* (NSB-11-79).³ STPI produced a white paper that both addressed the issues relating to the data management workforce and offered recommendations on how to better support these professionals.

Dr. Arvizu recognized the following Board Members who received recent honors:

- Dr. Subra Suresh was selected as the recipient of the 2013 Benjamin Franklin Medal awarded by the Franklin Institute in Philadelphia. Additionally, Dr. Suresh received the

¹ Dr. Bienenstock attended via telephone.

² Report available at: <http://www.nsf.gov/nsb/publications/2011/meritreviewcriteria.pdf>

³ Report available at: <http://www.nsf.gov/nsb/publications/2011/nsb1124.pdf>

Timoshenko Medal, an annual award given by the American Society of Mechanical Engineers (ASME) "in recognition of distinguished contributions to the field of applied mechanics."

- Dr. France Córdova was inducted as a board member of the Center for the Advancement of Science in Space (CASIS), a non-profit organization promoting and managing research on board the International Space Station U.S. National Laboratory.
- Dr. Diane Souvaine was appointed Vice Provost for Research at Tufts University.

3. NSF Director's Report

Dr. Subra Suresh, NSF Director, introduced the following NSF staff:

- Dr. H. Fleming Crim was appointed Assistant Director, Directorate for Mathematical and Physical Sciences (MPS) (effective January 2013).
- Dr. Kesh Narayanan was appointed Acting Assistant Director, Directorate for Engineering (ENG) (effective December 3, 2013).
- Ms. Dorothy Aronson was appointed Division Director, Information Systems, Office of Information and Resource Management (OIRM) (effective October 7, 2012).
- Dr. Richard Duschl was appointed Division Director, Research on Learning in Formal and Informal Settings, Directorate for Education and Human Resources (EHR) (effective November 4, 2012).
- Dr. Jeryl Mumpower was appointed Division Director, Social and Economic Sciences, Directorate for Social, Behavioral and Economic Sciences (SBE) (effective September 4, 2012).

Dr. Suresh stated that the Federal Government currently is operating under a continuing resolution (CR) until March 27, 2013. For NSF specifically, the funding rate for operations aligns with the level provided for FY 2012 (\$7 billion), prorated for this period of time. The CR legislation requires that NSF update Congressional appropriations committees on plans for operations for the period covered by the CR, and NSF provided this information at the end of October 2012.

The U.S. House of Representatives (House) and Senate are currently in session. The major issue before Congress is to come to agreement on more permanent deficit reduction measures in order to avoid the so-called "fiscal cliff" stipulated in the Budget Control Act (BCA) of 2011. A central element of the BCA is the process for automatic spending cuts, known as sequestration, which would reduce Federal spending by \$1.2 trillion over the next 10 years. Under this scenario, each NSF appropriation would experience approximately an 8 percent decrease in funding for FY 2013 starting January 1, 2013. These levels were specified in the "OMB Report Pursuant to the Sequestration Transparency Act of 2012 (P. L. 112-155)," which was issued by OMB on September 14, 2012.⁴

Dr. Suresh informed the Board that he testified before the House Science, Space, and Technology Committee on November 15, 2012 at a hearing entitled, "The U.S. Antarctic Program: Achieving Fiscal and Logistical Efficiency While Supporting Sound Science."

⁴ OMB report available at:

http://www.whitehouse.gov/sites/default/files/omb/assets/legislative_reports/stareport.pdf

Finally, Dr. Suresh informed the Board that on November 28, 2012, U.S. Representative Lamar Smith (R-TX) was selected and confirmed to succeed U.S. Representative Ralph Hall as Chairman of the House Science, Space, and Technology Committee.

4. Board Committee Reports

[Note: The Committee on Education and Human Resources (CEH) did not meet at the December 2012 Board meeting.]

a. Executive Committee (EC)

The primary purpose of the EC meeting was to describe a process for developing future Board agendas. Dr. Suresh emphasized the desire of the Board to keep topics focused on significant, big, and important issues deserving of the Board's attention to ensure the health and well-being of the science & engineering (S&E) enterprise. Though it was acknowledged that a new process will take several cycles to fine tune, the intent was that the present meeting would help to identify topics for the February 2013 Board meeting and beyond. It was noted that perhaps an interim teleconference and some ad hoc polling may be necessary to complete the February 2013 Board meeting agenda.

Each of the five standing committee chairmen was asked to provide insights on proposed future agenda topics for their respective committees. Dr. G.P. "Bud" Peterson, Committee on Audit and Oversight (A&O) chairman, requested to provide input to the EC at a later time. Each of the remaining four chairmen provided brief insights into the topics under review within their committees.

Dr. Suresh thanked the committee chairmen for identifying agenda topics and acknowledged that there was a rich set of options for consideration at future meetings. The EC asked Dr. Claude Steele, Committee on Education and Human Resources (CEH) chairman, to provide at a future Board meeting a more distilled version of some of the topics that he raised during his remarks. Dr. Suresh acknowledged the work of NSF and Board Office staff whose time investment will be important in shaping future agendas as they emerge from upcoming EC discussions.

b. Committee on Audit and Oversight (A&O)

Ms. Allison Lerner, NSF Inspector General, reported on two recently concluded investigations. She noted that the U.S. Attorney General approved statutory law enforcement authority for the NSF Office of Inspector General (OIG), broadening its investigative powers.

Ms. Lerner announced that OIG will sponsor a webinar or workshop in early 2013 for the NSF awardee community to discuss the data analytics methods and capabilities that are being employed by OIG in many of their grant audits. Mr. Sal Ercolano, Clifton Larson Allen Partner-in-Charge of the NSF financial statement audit, gave a summary of the FY 2012 audit-related reports. The auditors gave NSF an unqualified "clean" opinion on the financial audit and found no material weaknesses. This is NSF's 15th consecutive "clean" audit opinion. The Federal Information Security Management Act (FISMA) report on NSF's information technology (IT) security program also had no significant deficiencies. Mr. Brett Baker, Assistant Inspector General for Audit, presented the OIG FY 2013 Audit Plan.

Ms. Martha “Marty” Rubenstein, NSF Chief Financial Officer (CFO), gave an update, supplementing her written report, noting that NSF’s American Recovery and Reinvestment Act (ARRA) acceleration waiver request was submitted to OMB in advance of OMB’s deadline.

Mr. Gene Hubbard, NSF Chief Human Capital Officer, reported on the results from the Office of Personnel Management’s (OPM) 2012 Federal Employee Viewpoint Survey (FEVS). While the NSF results show that employees are dedicated and believe the work they and NSF do is important, the survey also indicates a continued downtrend in employee satisfaction scores. NSF intends to continue taking aggressive, concrete actions to address the survey results, in particular addressing employee engagement, employee workload, and overall employee satisfaction.

c. Committee on Science and Engineering Indicators (SEI)

The committee approved the narrative outlines for *Science and Engineering Indicators (Indicators) 2014*. Dr. Ray M. Bowen, chairman, informed the committee that final reviewer and lead reviewer assignments for *Indicators 2014* will be determined by the February 2013 Board meeting.

Ms. Cheryl Roesel, Publications Manager, NSF National Center for Science and Engineering Statistics (NCSES), provided a demonstration of the *Indicators 2012* mobile application, which should be ready for public release in early 2013.

Dr. Myron Gutmann, Assistant Director, SBE, provided information on a project to enhance the electronic delivery of *Indicators*.

Dr. Matthew Wilson, Science and Engineering Policy Analyst, Board Office, provided an overview of the media response to the public release of the second companion report to *Indicators 2012* entitled, *Diminishing Funding and Rising Expectations: Trends and Challenges for Public Research Universities (NSB-12-45)*.⁵ In light of the success of the communications effort in 2012, the committee discussed a proposed communication strategy for the committee for 2013 and discussed potential topics that might be suitable for a companion report to *Indicators 2014*.

d. Committee on Programs and Plans (CPP)

In CPP Open Session, the committee addressed the following two items:

- The committee discussed the structure and charges for CPP and SOPI. CPP noted the importance of polar programs and the overlap in scope of the two charges and recommended to the Board that the charge for SOPI be folded into the full CPP committee ensuring that these important issues would be considered by a larger group of Board Members. (See 1.d.)
- The committee discussed the implementation of the Board policy on recompetition (NSB-08-16).⁶ Dr. Cora Marrett, NSF Deputy Director, provided a status update on the NSF’s implementation of this policy, emphasizing the intent to make exceptions very rare. CPP will schedule a teleconference to continue the discussion within a few weeks after the December 2012 Board meeting.

⁵ Report available at: <http://www.nsf.gov/nsb/sei/companion2/files/nsb1245.pdf>

⁶ Statement on recompetition available at: http://www.nsf.gov/nsb/publications/2008/nsb0816_statement.pdf

The committee also was briefed on three information items:

- Dr. Craig Foltz, Program Director, MPS, updated the committee on the protracted legal proceedings that delayed the start of Advanced Technology Solar Telescope (ATST) construction until late November 2012. Dr. Foltz informed the committee that due to these delays, a new baseline will need to be developed for the project. NSF anticipates providing an update to the Board at the May 2013 meeting.
- Dr. Ian Robertson, Division Director for the Division of Materials Science (DMR), MPS, presented an update on the renewal of the Cornell High Energy Synchrotron Source (CHESS) and the assessment of DMR's future role in synchrotron science. NSF anticipates bringing an information item and an action item before the Board in FY 2013, prior to the end of the current cooperative agreement in early 2014. NSF expects to bring the results of the broader assessment process before the Board in 2014.
- Dr. Kelly Falkner, Acting Office Head for the Office of Polar Programs (OPP), provided the committee with an update on the U.S. Antarctic Programs. Dr. Falkner detailed NSF's ongoing response to the July 2012 report of the U.S. Antarctic Program Blue Ribbon Panel entitled, *More and Better Science in Antarctica Through Increased Logistical Effectiveness*.⁷ Dr. Falkner informed the Board that NSF created an internal tiger team to review the report's recommendations and provide implementation guidance, and presented a summary of the tiger team's report and recommendations. A teleconference will be scheduled to continue the discussion (teleconference data and time to be determined). NSF anticipates an agenda item on this topic at the February 2013 meeting.

CPP concluded the July 2012 Program Portfolio Planning activity on Space Weather and conducted its third Portfolio Planning discussion, focused on the NSF "Framework for Investments in Data Intensive Science and Engineering." Regarding the latter topic, Dr. Farnam Jahanian, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), presented an overview of the issues. CPP and several members of NSF senior management engaged in a discussion on the unique issues facing their directorates and offices (summarized in NSB/CPP-12-46). Dr. Diane Souvaine, CPP chairman, noted that the committee is likely to request a follow-up information item in the future to gauge NSF's progress in this area and to further evaluate the effectiveness of the Portfolio Planning Process itself. Additional Portfolio Planning Process sessions, on topics to be determined via a teleconference, are expected for all Board meetings during 2013.

In CPP Closed Session, NSF staff briefed the committee on two information items:

- Gemini Observatory (annual update)
- MPS Advisory Committee review of Astronomy portfolio

e. Committee on Strategy and Budget (CSB)

In CSB Open Session, the committee was informed that NSF recently launched a strategic planning process that will result in a new NSF Strategic Plan for the 2014–2018 time period. Dr. Joseph Dehmer, Senior Advisor for Strategic Planning, will head this writing effort. It is expected that this will be a CSB agenda item at the February 2013 Board meeting.

⁷ Report available at: http://www.nsf.gov/od/opp/usap_special_review/usap_brp/rpt/antarctica_07232012.pdf

Dr. Suresh updated the committee on the status of the FY 2013 appropriation. NSF continues to operate under a CR.

CSB discussed a study related to trends in science budgets that will aim to identify the kinds of information the Board should receive in order to help the Board help NSF with strategic planning and budgeting. At the end of FY 2012, the Board Office initiated work with STPI to develop some ideas about how to do a better job providing information to the Board.

CSB sought volunteers to serve as reviewers of products and reports as they are developed in the course of this study. This group will also potentially work with STPI and the Board Office to guide the inquiry and design of the information products. Several Board Members volunteered to serve as part of an informal working group: Drs. Robert Zimmer, Arnold Stancell, Diane Souvaine, G. Peter Lepage, and CSB chairman, France Córdova (with others added as needed). The end product would be a written report primarily for internal use that would identify the important themes and findings and would outline options for improved Board understanding and stewardship.

In CSB Closed Session, Dr. Suresh provided the committee with an update on NSF's progress in developing the NSF FY 2014 Budget Request to Congress.

Dr. Suresh reported NSF is preparing for several budget scenarios should sequestration occur. The BCA calls for across-the-board cuts of 8.2 percent to all NSF accounts. Dr. Suresh estimated this would result in 1,000 fewer grants in FY 2013 if implemented.

[signed]
Michael L. Van Woert
Executive Officer

Attachment:
Charge to the Task Force on Administrative Burdens ([NSB-12-67](#))

Charge to the Task Force on Administrative Burdens

Statutory Basis

"The Board shall render to the President and the Congress reports on specific, individual policy matters within the authority of the Foundation (or otherwise as requested by the Congress or the President) related to science and engineering and education in science and engineering, as the Board, the President, or the Congress determines the need for such reports." --- 42 U.S.C. § 1863(j)(2)

Action Recommended

The National Science Board (Board) will examine the administrative burden imposed on federally supported researchers at U.S. colleges, universities, and non-profit institutions and offer recommendations where appropriate on relieving the administrative workload.

Background

Over the past decade, there has been a variety of reports suggesting that Federal requirements are an increasing burden on academic researchers. A 2012 report by the National Research Council's (NRC) Committee on Research Universities, *Research Universities and the Future of America: Ten Breakthrough Actions Vital to Our Nation's Prosperity and Security*, found that "the problem of excessive regulatory burdens ... puts a drag on the efficiency of all university research" --- potentially costing "billions of dollars over the next decade." That report recommended that Federal agencies "reduce or eliminate regulations that increase administrative costs, impede research productivity, and deflect creative energy without substantially improving the research environment," and that they harmonize regulations and reporting requirements across agencies. In a 2006 survey of its members and a subsequent report, the Federal Demonstration Partnership, a cooperative initiative among Federal agencies and institutional recipients of Federal funds, found that faculty spent an average of 42 percent of their time for federally sponsored research projects on associated administrative tasks.

Congress, in response to the NRC report, has held multiple hearings on this topic and in October 2012 requested that the Government Accountability Office (GAO) conduct a review of current regulations and reporting requirements imposed on research universities. In the past two years, the Obama Administration issued two Executive Orders (EO) on this topic: *Improving Regulation and Regulatory Review* (EO 13563) and *Identifying and Reducing Regulatory Burdens* (EO 13610). These seek to reduce the "significant burdens and costs" associated with Federal regulations while recognizing their "indispensable role in protecting public health, welfare, safety, and our environment." As a consequence of these and other EOs, the Office of Management and Budget (OMB) has developed a number of proposed changes and reforms that relate to research grants. These were captured in the February 2012 document *Reform of Federal*

Policies Relating to Grants and Cooperative Agreements; Cost Principles and Administrative Requirements (Including Single Audit Act), which continues to be revised following a period of public comment.

The Board shares the concern that some administrative tasks may be unnecessarily consuming valuable time that our Nation's scientists, engineers, and educators could otherwise devote to the federally sponsored research that underpins our national security, prosperity, health, and welfare. Given the budget constraints at many of our Nation's research institutions¹, and broad Federal interest in reform, the Board feels that a rigorous assessment of Federal Government mandates, and the related university requirements, that lead to administrative burdens for researchers is necessary and timely.

Policy Objectives

In an effort to improve the efficiency and productivity of the R&D enterprise, the Task Force on Administrative Burdens will carry out the following initiatives and then bring policy recommendations to the full Board:

- Understand the evolution and extent of current regulatory and reporting requirements for federally funded research, in particular for the Nation's six largest funding agencies²;
- Identify and examine data on faculty administrative burden resulting from these requirements, including the pattern of changes in reported burden over time;
- Identify opportunities to reduce faculty administrative burden stemming from federally supported research requirements while maintaining regulatory policies that ensure accountability and that federally sponsored research continues to be conducted in an ethical and safe manner;
- Examine the contribution of university policies to research faculty administrative burden;
- Explore current efforts on the part of Federal agencies to harmonize reporting, streamline duplicative requirements and eliminate or modify ineffective regulation; and,
- Develop policy recommendations for National Science Foundation (NSF) engagement and recommend additional such efforts.

¹ See, for instance, the 2012 NSB report *Diminishing Funding and Rising Expectations: Trends and Challenges for Public Research Universities*

² These agencies – the National Institutes of Health, National Science Foundation, Department of Defense, National Space and Aeronautics Administration, Department of Energy, and U.S. Department of Agriculture -- provided 97 percent of all Federal academic R&D support in 2009.

Logistics

The task force will develop an inventory and assessment of recent and ongoing activities related to the scope of the study and an inventory of Federal agency requirements that contribute to faculty administrative burdens. Based on examination of existing data, a survey or request for information may be developed by the task force, within appropriate Federal regulations, and distributed to grantees. It is anticipated that the task force will produce a final report that summarizes its findings and presents recommendations for reducing faculty administrative burden within 12 months from the date of the formation of the task force. Printed copies of a final Board report will be distributed widely and available on the Board Web site for the general public, universities, Congress, various special interest groups, and the broader scientific community. In addition, the task force may issue a statement or comments indicating the Board's position on proposed reform of Federal research grants by the OMB. The task force expects to conclude its activities within 18 months from the date that formation of the task force is approved. The Board Office will serve as the focal point for coordination and implementation of all task force activities.