

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the August 25-26, 2010 Meeting

The major actions and approvals of the National Science Board (Board, NSB) and a preliminary summary of the proceedings at the Board's August 2010 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the August 2010 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval.

1. Major Actions and Approvals at the 415th NSB Meeting (not in priority order):

- a. The Board approved the following schedule of meetings for calendar year 2011: February 15-16, May 10-11, July 28-29, September 13-14, and December 13-14 (NSB-10-51). (Attachment)
- b. The Board approved a resolution on Electronic Participation by Board Members at Board, Committee, Subcommittee, and Task Force Meetings (and Any Other Entity Consisting of Members of the Board and Reporting to the Board).
- c. The Board approved the FY 2012 budget request to the Office of Management and Budget (OMB) for NSF, which includes the Board, as well as the FY 2012 budget request to OMB for the NSF Office of Inspector General.
- d. The Board approved the charge and workplan for the Committee on Programs and Plans, Task Force on Unsolicited Mid-Scale Research (MS). [Previously known as the Task Force on Mid-Scale and Multi-Investigator Research]
- e. The Board approved the charge and workplan for the Committee on Strategy and Budget, Task Force on Data Policies (DP).
- f. The Board approved delegating authority to the Executive Committee to review, approve, or disapprove any request for bridge funding relating to a particular program.
- g. The Board approved two documents related to the Major Research Equipment and Facilities Construction (MREFC) process: the annual timeline for the integration of Board process with NSF budget process and the Board MREFC process.
- h. The Board Chairman established the *ad hoc* Committee on Nominating for NSB Elections, informally known as the Elections Committee, with Dr. Gulari, chairman, and Drs. Randall and Peterson, members.

- i. The Board Chairman established the *ad hoc* Committee on Honorary Awards with Dr. Córdova, chairman, and Drs. Peterson and Thompson, members.
- j. The Board approved the minutes of the Plenary Open Session (NSB-10-32) for the May 2010 meeting (<http://www.nsf.gov/nsb/meetings/2010/0504/minutes.pdf>). Minutes for the Plenary Closed Session (NSB-10-31) for the May 2010 meeting of the Board were also approved. [There was no Plenary Executive Closed Session in August 2010.]

2. Board Chairman's Report

Dr. Ray Bowen, NSB Chairman, and Dr. Cora Marrett, Acting NSF Director, presented the Director's Award for Collaborative Integration for the "NSB-DIS SharePoint Team." This collaborative award recognized staff members in the Board Office and the Division of Information Systems (DIS) of the Office of Information and Resource Management (OIRM) for their ongoing and outstanding efforts to overcome technological challenges of modernizing electronic information access for Board Members. From OIRM: James Graham and Abigail Marchetti; and from the Board Office: Lee Anne Arslan, Bruce Levenson, Elizabeth Strickland, and Betty Wong.

The Chairman introduced a resolution regarding Electronic Participation by NSB Members at Board, Committee, Subcommittee and Task Force Meetings (and Any Other Entity Consisting of Members of the Board and Reporting to the Board). The resolution indicates that the Board prefers in-person attendance at Board meetings. However, in rare and exceptional situations, the Chairman of the Board may authorize off-site attendance, by telephone or other means, if a Member is physically unable to attend in person due to a medical condition, a transportation emergency, or an unavoidable and/or unanticipated schedule conflict. [*The Board approved the resolution.*] (See 1.b.)

Dr. Bowen also announced that in an effort to better comply with the Sunshine Act, the Executive Committee, instead of the full Board, may be called upon to vote to close future Board meetings or portions of Board meetings. This will depend on whether action and agenda items for the next Board meeting can be finalized in time for a full Board vote. The ballot or resolution will address specific, instead of general, closure exemptions based on final agendas.

The Board approved the 2011 calendar of Board meeting dates. (See 1.a. and Attachment). The Chairman announced that the Board will soon be considering locations for next year's off-site meeting and retreat to take place September 13-14, 2011. He asked that Board Members give suggestions to Dr. Michael Van Woert, Executive Officer and Board Office Director. The Board will vote on the location of the 2011 off-site meeting and retreat at the December 2010 meeting.

Dr. Bowen reported that on June 23, 2010, Dr. Esin Gulari, Vice Chairman, and Dr. Van Woert, joined him for meetings on Capitol Hill. They met with the Chairman and Ranking Member of the Committee on Science and Technology, Bart Gordon and Ralph Hall. Their discussions were general and reflected broad support for NSF. They also met with Dr. John Holdren, Director of the Office of Science and Technology Policy (OSTP), where they discussed a variety of topics. Dr. Holdren particularly praised NSF's Science, Technology, Engineering, and Mathematics (STEM) education programs. He also identified two scientific areas of interest: (1) data-enabled science and (2) science at the biology, physical science, and engineering interface.

Dr. Bowen also reported on a letter he sent to Congress in August 2010 in response to its request for an evaluation of a pilot program. The America COMPETES Act of 2007 directed NSF to develop a pilot program intended to award 1-year grants to allow new principal investigators (PIs) the opportunity to improve and resubmit their research proposals. The letter addressed the following points:

- As NSF laid the groundwork for this new program, it became evident that the eligibility requirements for individuals to receive a grant under the pilot were very restrictive. As a result, a limited set of investigators met the criteria.
- After consultation with congressional staff, NSF then reviewed alternatives to this pilot program that would retain the spirit of the mandate – that is to increase the success rates of new PIs. Enactment of the American Recovery and Reinvestment Act (ARRA) provided a mechanism for the agency to focus efforts on new PIs.
- Reports on ARRA funding, including the numbers of new investigators, were presented to the Board at every meeting since ARRA’s inception.
- At the end of the second quarter in 2010, there were 2,810 new PIs and co-PIs funded through the ARRA Research and Related Activities account.
- With the additional ARRA funding, new PIs had a success rate of 25 percent in FY 2009, as compared to the previous 4 years where the success rate for this group ranged between 17 and 19 percent.
- NSF continues to review, evaluate, and broaden its reach to enhance the success of new PIs by means of such programs as CAREER and outreach efforts such as “NSF Days.”

The Chairman reported that the NSF Authorization Act of 2002, Section 14 requires that the Board report to Congress any delegations of authority related to the use of the MREFC account. He would report to Congress that there had been no delegation of authority related to MREFC funds during the last year. The report is due September 15, 2010.

Additionally, the Chairman had two committee announcements (See 1.h. and 1.i.). He also announced the new chairmen for standing committees:

- Committee on Audit and Oversight (A&O): Mr. Arthur Reilly
- Committee on Education and Human Resources (CEH): Dr. Camilla Benbow
- Committee on Science and Engineering Indicators (SEI): Dr. José-Marie Griffiths
- Committee on Programs and Plans (CPP): Dr. Mark Abbott
- Committee on Strategy and Budget (CSB): Dr. Diane Souvaine

Lastly, Dr. Bowen introduced the following new Board Office staff:

- Dr. Michael Van Woert was appointed as the Executive Officer and Board Office Director in May 2010.
- Mr. Daniel Lauretano was appointed Counsel to the National Science Board in May 2010.
- Dr. Matthew Wilson, having finished his AAAS fellowship, will join the Board Office as a Science Policy Analyst later this month.
- Mr. Mike Town will join the Board Office staff in September 2010 as an Albert Einstein Distinguished Educator Fellow.

3. NSF Director's Report

Dr. Cora Marrett, Acting NSF Director, introduced the following new NSF staff assignments:

- Dr. James Lightbourne, Division Director, Graduate Education (DGE), Directorate for Education and Human Resources (EHR) (as of June 6, 2010).
- Dr. Howard Wactlar, Division Director, Information and Intelligent Systems (IIS), Directorate for Computer and Information Science and Engineering (CISE) (as of June 7, 2010).
- Dr. Michael Morgan, Division Director, Atmospheric and Geospace Sciences (AGS), Directorate for Geosciences (GEO) (as of June 21, 2010).
- Dr. David Conover, Division Director, Division of Ocean Sciences (OCE) GEO (as of July 19, 2010).

Dr. Marrett reported that NSF anticipates making an award to the Human Frontier Science Program (HFSP) at the request of OSTP. HFSP is a multinational, nonprofit organization that promotes interdisciplinary research and cooperation on the complex mechanisms of living systems through peer-reviewed fellowships and research grants. HFSP is supported by annual funding from 13 countries and the European Union. U.S. support is provided by the National Institutes of Health (NIH) and NSF. It is expected that NSF will contribute \$2.3 million and NIH will provide \$7.6 million. This is an increase of 1 percent over the 2009 contribution and will bring the U.S. contribution to \$9.9 million. This is compared to almost \$30 million provided annually by Japan and the total HFSP budget of \$61 million.

For a congressional update, Dr. Marrett reported on the following:

- On May 28, 2010, the House passed H.R. 5116, the America COMPETES Reauthorization Act of 2010 by a recorded vote of 262-150. This is a 5-year authorization bill. The Senate Committee on Commerce, Science, and Transportation held a full committee mark-up on July 22, 2010 on S. 3605, their version of the America COMPETES Reauthorization Act of 2010, a 3-year authorization bill, and passed the bill by voice vote. Senate floor action has not yet been scheduled.
- On May 29, 2010, the House Appropriations Committee's Subcommittee on Commerce, Justice, Science, and Related Agencies (CJS) held a Subcommittee mark-up of its FY 2011 CJS appropriation bill. The bill passed the Subcommittee by voice vote. NSF received its full requested amount of \$7.4 billion, an 8 percent increase over the FY 2010 enacted level. There is no word yet as to whether or not there will be a Full Committee mark-up. The Senate Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies held a Subcommittee mark-up on July 21, 2010. The bill was passed by voice vote and subsequently brought up by the full committee the next day, July 22, 2010, where it was also passed by voice vote. NSF received a slightly lower appropriation of \$7.35 billion, a 7 percent increase over the FY 2010 enacted level, than was provided in the House Subcommittee mark-up. Senate floor action is uncertain.
- On June 10, 2010, Dr. Thomas Peterson, Assistant Director, Directorate for Engineering (ENG), testified before the House Science and Technology Committee's Subcommittee on Research and Science Education at a hearing entitled, "From the Lab Bench to the Marketplace: Improving Technology Transfer." The purpose of the hearing was to review the process of transferring knowledge and technology from academic researchers to the private sector and discuss ways to improve technology transfer.

4. Board Committee Reports

[Note: The Executive Committee and the Task Force on the NSB 60th Anniversary did not meet in August 2010.]

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

In Open Session, A&O heard several presentations: Dr. Marrett provided an update on Human Resource activities at NSF, including information about the Labor-Management Partnership activities and the Office of Personnel Management (OPM) recent assessment of NSF's human resource activities.

Ms. Martha Rubenstein, Chief Financial Officer (CFO), briefed the committee on follow up to the FY 2009 Financial Statement Audit, activities related to the current year's audit and internal control actions, progress on the modernization of NSF's financial system, NSF's successful oversight of activities related to ARRA awards, and the considerable progress that has been made to enhance the collaboration between Office of Inspector General (OIG) and NSF staff in the audit resolution arena.

Ms. Allison Lerner, NSF Inspector General (IG), introduced the new Assistant IG for Audit, Dr. Brett Baker. She discussed the joint working group comprising OIG and the Office of Budget, Finance, and Award Management (BFA) managers, which is developing an improved method for resolving audit findings and recommendations. She also reported on recent meetings with congressional staff, and the outcomes of two successful investigations.

Ms. Mignon Anthony, Project Officer in charge of the effort to identify and design NSF's future headquarters space, gave a status report.

The committee also discussed possible NSB policy changes regarding threshold amounts for awards requiring Board approval.

In Closed Session, the status of a pending procurement was discussed.

[During a teleconference on August 20, 2010, the committee reviewed and approved the FY 2012 Budget request for OIG.] *[The full Board subsequently approved the OIG FY 2012 budget request to OMB.]* (See 1.c.)

b. Committee on Education and Human Resources (CEH)

The committee heard an update on plans to rollout the *Preparing the Next Generation of STEM Innovators* report on September 15, 2010. A draft strategy for disseminating and advancing the report was reviewed.

After exploring the feasibility of a decadal study on education research, Dr. John Bruer, former CEH chairman, concluded that the magnitude of the activity exceeded NSB resources and recommended that CEH give attention to key, focused, NSF education activities.

Dr. Joan Ferrini-Mundy, Acting EHR Assistant Director, gave a presentation about NSF's role in the current and future education research landscape.

The committee was made aware of the National Academies' Board on Science of Education's recently released draft framework for science education standards.

c. Committee on Science and Engineering Indicators (SEI)

SEI reviewed the process for producing *Science and Engineering Indicators 2012*, including the key dates for Board involvement. The committee then discussed the plans for the different *Indicators* chapters. Revisions in light of Board comments will be circulated to the committee in a few weeks so that it can approve the chapter outlines at the December 2010 meeting.

The committee decided to continue the focus on Experimental Program to Stimulate Competitive Research (EPSCoR) states that appeared in the 2010 *Indicators* State Chapter.

The committee also agreed to defer decisions about the treatment of public knowledge of evolution until the completion of the study by the Directorate for Social, Behavioral, and Economic Sciences (SBE) in February 2011 that is addressing this issue.

The committee agreed on a title for the Indicators Education Tool, "STEM Education Data and Trends." The Education Tool is designed to acquaint precollege students, parents, guidance counselors, and educators with data bearing on STEM education and workforce opportunities. The committee discussion produced numerous suggestions for associations that should be notified of the publication of this Web-based tool.

The committee also heard and approved plans for print and electronic publications related to *Indicators 2012*. The plans stressed movement toward Web-based materials and noted the role of the Digest as something that could be handed out and used as an introduction to some of the important findings in *Indicators*. The print volume of *Indicators*, along with the Board's Companion Piece policy document, will be mailed at the time of publication, with CDs available about 3 weeks later.

d. Committee on Programs and Plans (CPP)

In CPP Open Session, the committee approved two documents relating to the MREFC process: (1) the annual timeline for the integration of Board process with NSF budget process and (2) Board MREFC process. [*The full Board subsequently approved both processes.*] (See 1.g.)

The committee received four written information items: the NSF Director's Determination of Satisfactory Progress in the Management of the National Radio Astronomy Observatory (NRAO) by Associated Universities, Inc. (AUI); an update on DataNet Awards to Johns Hopkins University and the University of New Mexico; a High Performance Computing update on the National Institute for Computations Sciences at the University of Tennessee, Knoxville; and an update on Implementation of NSF's Revised Cost Sharing Policy.

The committee also continued the discussion of award thresholds for NSB review, led by former chairman, Dr. Kelvin Droegemeier. Dr. Droegemeier summarized a background paper and a white paper presenting several potential options for new award thresholds. After discussion, the committee anticipated coming to final resolution on this issue in upcoming meetings.

The committee also heard further on the topic of implementation of the Board's recompetition policy. Dr. Peterson and Dr. Edward Seidel, Assistant Director, Directorate for Mathematical and Physical Sciences (MPS), gave a presentation on the issues associated with recompetition. Dr. Seidel presented two information items on facilities that are eligible for recompetition: the National Superconducting Cyclotron Laboratory (NSCL) and the National High Magnetic Field Laboratory (NHMFL). After discussion, the committee concurred with NSF's recommendations on these items. It asked NSF to provide a list of all items impacted by this policy and for NSF to provide an implementation plan that raises all issues.

Dr. Alan Blatecky, Acting Director, Office of Cyberinfrastructure (OCI), presented an item on Strategic Planning for Cyberinfrastructure. Dr. Seidel and Dr. Timothy Killeen, GEO Assistant Director, also spoke about cyberinfrastructure's potential for transforming their directorates' science. Dr. Blatecky noted that similar impacts will be found throughout NSF. The committee asked that NSF continue to provide information as it develops an overarching strategic plan for cyberinfrastructure.

Dr. Seidel gave an update on the status of the Advanced Laser Interferometer Gravitational-Wave Observatory (AdvLIGO). He informed the committee that research had shown that locating a third interferometer in Australia will greatly improve AdvLIGO's research capabilities. NSF informed the Board that it plans to approve the Australian Letter of Intent, which stipulates that it meets stringent LIGO criteria.

Dr. James Ulvestad, Director, Division of Astronomical Sciences (AST), MPS, gave an update on the status of the Cooperative Agreement for the Gemini telescope. NSF expects to bring an action item to extend the current cooperative agreement with the Association of Universities for Research in Astronomy (AURA), the management entity, before the Board at the August 2011 meeting.

Dr. Myron Gutmann, SBE Assistant Director, presented an information item on the renewal of the six Science of Learning Centers (SLCs) - three in a first cohort from 2004 and three in a second cohort from 2006. All three centers from the first cohort came before the Board last year as action items, and two were extended for 18 months pending a critical review at that time. Pending the outcome of this review, NSF expects to bring up to five actions before the Board at upcoming meetings.

Dr. Patrick Haggerty, Research Support and Logistics Manager, Office of Polar Programs (OPP), provided an update on the Arctic contract for Logistics Support to Arctic Research. This contract is currently with CH2M HILL, but is up for renewal after May 2012. OPP informed the committee that it determined that a contract similar to the current contract is ideal, and they expect to come before the Board at the December 2010 meeting for approval of the issuance of a request for proposal (RFP) and a competitive procurement process for obtaining a contract.

In CPP Closed Session, the committee heard two information items: a status update on the University of Illinois Urbana-Champaign High Performance Computing Award, and a status update on the proposed Deep Underground Science and Engineering Laboratory (DUSEL).

CPP Subcommittee on Polar Issues (SOPI)

Dr. Karl Erb, OPP Director, informed the subcommittee that the White House issued a Presidential Memorandum integrating the Interagency Arctic Research Policy Committee (IARPC) into the President's National Science and Technology Council (NSTC).

Dr. Erb also reported that a new Memorandum of Agreement between NSF and the U.S. Coast Guard (USCG) was signed that will govern the NSF use of and reimbursement to USCG for icebreaking services, if the USCG again includes funds for this activity in its budget request. He also reported that NSF has recently signed an agreement with France's Minister of Science and Education that will provide U.S. scientists access to French-held facilities and vice versa for collaborative research. A joint workshop will be held in France next spring to further this partnership.

Dr. Erb also provided an update on the U.S. Antarctic Program (USAP) 2010-2011 review, which will consist of two phases: an NRC panel will identify the science drivers looking ahead 2 decades, and a subsequent external Blue Ribbon Panel will identify options for providing any required logistics and infrastructure.

In response to a request from Board members, Dr. Alexandra Isern, OPP Program Director, provided an update on polar research vessel support.

CPP Task Force on Unsolicited Mid-Scale Research (MS) [Previously known as the Task Force on Mid-Scale and Multi-Investigator Research]

Dr. Souvaine, MS chairman, and Dr. Droegemeier (former MS chairman) presented the MS charge and timeline for review and approval by CPP, which had been approved by the task force without additional changes. The task force explained that the goal of the project is to address whether MS, unsolicited research is effectively supported by NSF. The task force provided a definition of "mid-scale research" to CPP. The task force decided to remove the "multi-investigator" part of the title since the salient issue is whether a project is "mid-scale," regardless of number of investigators. *[The full Board subsequently approved the MS charge and workplan.]* (See 1.d.)

e. Committee on Strategy and Budget (CSB)

In CSB Open Session, Dr. Clifford Gabriel, Acting MPS Executive Officer and chairman of the NSF's Strategic Plan Working Group, provided an update on NSF's progress on revising NSF's current Strategic Plan. Dr. Gabriel noted that the document is currently under review at OMB. NSF staff met with OMB and OSTP staff on July 26, 2010 to discuss general Administration feedback on the plan. Formal comments were received from OMB on August 18, 2010. Although the draft Strategic Plan has been, and will continue to be, used for the FY 2012 Budget cycle, the document is not expected to be finalized until February 2011.

The committee received an update on the NSB budget from Dr. Van Woert, who gave a brief breakdown of the current \$4.5 million NSB budget, highlighting the different expense categories, of which staff salary was identified as the largest category (at 65 percent). He noted that there is flexibility in the budget to carryout Board activities. Dr. Van Woert also reported that he will be

evaluating staffing levels and space requirements and utilization within the framework of an overall staffing and space plan for the Board Office. He confirmed that cost savings within the different expense categories could be shifted as needed to cover Board projects.

In CSB Closed Session, the committee addressed the FY 2012 budget. Dr. Marrett provided an overview of the FY 2012 budget submission for NSF, including NSB, which was approved by CSB. *[The full Board subsequently approved the NSF FY 2012 budget request to OMB.]* (See 1.c.)

CSB Subcommittee on Facilities (SCF)

The subcommittee discussed the outcome of the June 29, 2010 meeting with the Acting NSF Director and NSF Assistant Directors; the *NSF Draft Principles for Managing the Large Facility Investment*, and identified next steps in the SCF portfolio review. The meeting on June 29 established the basis for ongoing collaboration and spurred the initial development of principles for research infrastructure funding and management. The subcommittee identified key areas for additional consideration and will work with CPP and NSF to develop revised principles, and it will then test the revised principles using MREFC projects that come before the NSB for approval this year. The subcommittee will also broaden its focus to encompass additional aspects of the research infrastructure portfolio. SCF plans to hold a teleconference in late October or November 2010 to further discuss the principles, with a goal of having a document for approval at the December 2010 meeting.

CSB Task Force on Data Policies (DP)

Dr. Siedel provided an update from NSF on its data policy and implementation changes planned for January 2011. The charge and workplan developed from the May 2010 meeting were reviewed, discussed, and approved. DP revised a draft set of principles that will inform future activities, and discussed the goals for a stakeholder workshop that will be planned for early 2011. *[The full Board subsequently approved the DP charge and workplan.]* (See 1.e.)

f. Task Force on Merit Review (MR)

Dr. John Bruer, the new chairman of the task force, led a discussion of the goals of the task force and an historical perspective on some of the larger issues surrounding the two merit review criteria. The task force spent the remainder of the meeting discussing the status of the various approaches used to gather data on the use and utility of the two merit review criteria, which included the following: a refined set of issues in which to elicit input, discussing the importance of understanding both short- and long-term impacts that the review criteria have had on the way the scientific community approaches its research questions; the status of the CISE/SBE Research Portfolio Analysis project to exploit automated text-mining tools to help NSF look at its portfolio of proposals and awards; and the feasibility of setting up a blog for eliciting informal input broadly from the stakeholder communities on the issues MR is addressing.

[signed]
Michael L. Van Woert
Executive Officer

NATIONAL SCIENCE BOARD
CALENDAR OF MEETINGS
2011

February 15 - 16
(Tuesday - Wednesday)

May 10 - 11
(Tuesday – Wednesday)
[Annual Meeting and Awards Dinner]

July 28 - 29
(Thursday - Friday)

September 13 - 14
(Tuesday - Wednesday)
[Annual Retreat and Visit]

December 13 - 14
(Tuesday - Wednesday)