

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the August 5-6, 2009 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 2009 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the August 2009 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval at the September 2009 meeting.

1. Major Actions of the Board (not in priority order):

- a. The Board approved the minutes of the Plenary Open Session (NSB-09-54) for the May 2009 meeting (<http://www.nsf.gov/nsb/meetings/2009/0513/minutes.pdf>). Minutes for the Plenary Executive Closed and Closed Sessions for the May 2009 meeting of the Board were also approved.
- b. The Board approved a resolution to close portions of the upcoming September 23-24, 2009 Board meeting dealing with staff appointments; future budgets; grants and contracts; specific Office of the Inspector General investigations and enforcement actions; and National Science Foundation (NSF) participation in a civil or administrative action, proceeding, or arbitration (<http://www.nsf.gov/nsb/meetings/2009/0923/closing.pdf>).
- c. The Board authorized the NSF Acting Deputy Director, at her discretion, to make an award to the University of Chicago for the TeraGrid Extension: Bridging to XD.
- d. The Board authorized the NSF Acting Deputy Director, at her discretion, to make an award to Purdue University for the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) Operations (FY 2010 – FY 2014).
- e. The Board authorized the NSF Director, at his discretion, to make an award to the Association of Universities for Research in Astronomy for the Approval of Construction Funding for the Advanced Technology Solar Telescope (ATST).
- f. The Board approved forwarding the list of recommended Board Member nominees to the President for the Board Class of 2010-2016.
- g. The Board approved the FY 2011 budget request to the Office of Management and Budget (OMB) for NSF, which includes the Board, as well as the FY 2011 budget request to OMB for the Office of the Inspector General.

- h. The Board approved the “Orange Book” draft for *Science and Engineering Indicators 2010*, except for Chapter 7, subject to final edits approved by the Chairman of the Board and the chairman of the Committee on Science and Engineering Indicators (SEI).
- i. The Board approved the *Digest of Key Science and Engineering Indicators 2010* “stories,” subject to final edits by the Board Chairman and the SEI chairman.
- j. The Board approved the following meeting dates: December 1-2, 2010. [Other 2010 meetings were approved in May 2009.] (See: Attached “NSB Calendar of Meetings, 2010” NSB-09-42.)
- k. The Board Chairman established the *ad hoc* Committee on Honorary Awards to work on the Vannevar Bush Award and the NSB Public Service Award. Committee chairman and members will be announced at a future meeting.
- l. The Board Chairman discharged the *ad hoc* Committee on NSB Nominations for the Class of 2010 – 2016, with thanks to Dr. Alan Leshner, chairman, and Dr. Patricia Galloway and Mr. Arthur Reilly, members.

2. Board Chairman’s Report

Dr. Steven Beering, Chairman, and Dr. Arden Bement, NSF Director, presented the Director’s Award for Collaborative Integration for the “NSB-OLPA Public/Congressional Affairs Team.” This collaborative award recognized staff members in the Office of Legislative and Public Affairs (OLPA) and the Board Office for outstanding accomplishments in communicating the work of the Board to the public and Congress. From OLPA: Teresa Davies, Tony Gibson, and Lisa-Joy Zgorski; and from the Board Office: Jennie Moehlmann, Beverly Sherman, and Kim Silverman.

Additionally, Dr. Beering recognized Dr. Matthew Wilson for his outstanding service to the Board Office. As an American Association for the Advancement of Science (AAAS) Fellow, Dr. Wilson, was not eligible for a Director’s Award; however, he was a contributor to the Board’s outreach activities, including the creation of the Board’s Wikipedia page. Dr. Beering also announced that the AAAS Fellowship for Dr. Wilson was renewed for another year.

Dr. Beering reported that the NSF Authorization Act of 2002, Section 14 requires that the Board report to Congress the condition of any delegation of authority that relates to funds appropriated for any project in the Major Research Equipment and Facilities Construction (MREFC) account. He will be reporting to Congress that there had been no delegation of authority related to MREFC funds, during the last year. The report is due September 15, 2009.

Dr. Beering announced that the Board will soon be considering locations for next year’s off-site meeting and retreat to take place September 23-24, 2010 and asked that Board Members to give suggestions to Dr. Craig Robinson, Acting Executive Officer and Board Office Director. The Board will vote on the location of the 2010 off-site meeting and retreat at the December 2009 meeting.

The Board's "Expert Panel Discussion on the Next Generation of STEM Innovators" will take place on August 24-25, 2009 at NSF. The over-arching goal of the project is to identify and develop highly talented and highly motivated students, who will become the future leaders in STEM disciplines. A diverse group of experts from multiple disciplines were selected to form the various panels. NSF and NSB will be well represented at the discussion, and the U.S. Secretary of Education, Mr. Arne Duncan, accepted the Board's invitation to provide the keynote address on August 25. Following the expert panel discussion, the Board's Committee on Education and Human Resources (CEH) will produce a white paper with recommendations for consideration by the Board.

On the subject of outreach, Dr. Beering announced that the Board had two new publications. One is a result of the Committee on Strategy and Budget's Task Force on Cost Sharing entitled, *Investing in the Future: NSF Cost Sharing Policies for a Robust Federal Research Enterprise* (NSB-09-20). The other is from the Committee on Programs and Plans' Task Force on Sustainable Energy entitled, *Building a Sustainable Energy Future: U.S. Actions for an Effective Energy Economy Transformation* (NSB-09-55). Both reports offer Board recommendations, and will be distributed to Congress, the Office of Science and Technology Policy (OSTP), and then placed on the NSB Web site. Additionally, a pamphlet, *National Science Board Members 2009* (NSB-09-68), also known as the Board "Photobook," was recently printed and will be distributed and posted on the NSB Web site..

The Chairman also reported that Dr. Kelvin Droegemeier testified before the Senate Committee on Commerce, Science, and Transportation on July 28, 2009 for the hearing on "Weathering the Storm: The Need for a National Hurricane Initiative." As co-chairman of the former Task Force on Hurricane Science and Engineering, he presented information to the Senate on the importance of hurricane research.

Dr. Beering announced the departure of Ms. Tami Tamashiro, who will leave the Board Office to start Ph.D. studies in neuroscience. Ms. Tamashiro was a Science Assistant in the Board Office since November 2006, and served as the Executive Secretary for both the Task Force on International Science and the Task Force on Sustainable Energy. He also thanked Mr. Evan Clinton, a summer student who will attend Virginia Tech in the fall, for his good work as part of the Board Office staff during the past few months.

The Board approved the December 1-2, 2010 meeting dates, which were added to the NSB Calendar of Meeting for 2010. (See 1.j. and Attachment) Additionally, the Chairman had two committee announcements. (See 1.k. – 1.l.)

A new Board Web site was launched that emphasizes the Board's policy reports and works to make these reports appear more prominently in Web search engines. Visit: <http://www.nsf.gov/nsb/>

3. NSF Director's Report

Dr. Bement introduced the following new NSF staff:

- ◆ Dr. Robert Trew, Division Director, Division of Electrical Communications and Cyber Systems (ECCS), Directorate for Engineering (ENG) (as of May 26, 2009).
- ◆ Ms. Claudia Postell, Director, Office of Equal Opportunity Programs (OEOP) (as of August 3, 2009).

Dr. Bement also announced the following NSF staff departures:

- ◆ Dr. Tony Chan, Assistant Director, Directorate for Mathematical and Physical Sciences (MPS). On September 1, 2009, Dr. Chan will become President, Hong Kong University of Science and Technology.
- ◆ Dr. David Lightfoot, Assistant Director, Directorate for Social, Behavioral, and Economic Sciences (SBE). Dr. Myron Gutmann will replace Dr. Lightfoot (as a Consultant on August 10, 2009 and as Assistant Director, SBE, on November 2, 2009).

Dr. Bement reported on the following congressional highlights:

- ◆ The House recently passed their version of the Commerce, Justice, Science and Related Agencies Appropriations for FY 2010, which provides funding for NSF. The Senate Appropriations Committee passed its version of the Senate Commerce, Justice, Science and Related Agencies Appropriations bill, and was awaiting action on the Senate Floor. Both bills will keep the NSF budget on the doubling path set by the President. The House provided NSF's overall funding at \$6.936 billion, an increase of \$446 million, or 6.9 percent, over the FY 2009 Omnibus. The Senate provided NSF with \$6.916 billion, an increase of \$425 million, or 6.6 percent, over the FY 2009 Omnibus.
- ◆ On June 16, 2009, the House Science and Technology Subcommittees on Technology and Innovation and on Research and Science Education held a joint hearing on Agency Responses to Cyberspace Policy Review. Dr. Jeannette Wing, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE) testified for NSF.
- ◆ On July 30, 2009, the House Science and Technology Subcommittee on Research and Science Education held a hearing on "A Systems Approach to Improving K-12 STEM Education." Dr. Wanda Ward, Acting Assistant Director, Directorate for Education and Human Resources (EHR), testified for NSF.
- ◆ On July 9, 2009, NSF notified Members of Congress and Governors that President Obama named more than 100 young science, math, and engineering teachers and mentors as recipients of two prestigious Presidential Awards for Excellence. Also announced were 100 beginning researchers as recipients of the Presidential Early Career Awards for Scientists and Engineers. Awards will be presented at a White House ceremony in the fall.

4. Board Committee Reports

[Note: The Executive Committee (EC) did not meet in August 2009.]

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

In A&O Open Session, Dr. Dan Arvizu, A&O chairman, updated the Committee on plans for NSF's location after the December 2013 expiration of the current lease and on NSF actions to support responsible conduct of research in international situations. More information on these topics will be presented at the December 2009 meeting.

Dr. Bement, along with Dr. Cora Marrett, Acting NSF Deputy Director, discussed NSF's human resource management, including the agency's response to congressional concerns. NSF's goal is to be recognized as the model for workforce management in the Federal Government. Opportunities for Board engagement on this issue will be discussed at the September 2009 retreat.

Mr. Thomas Cooley, NSF Chief Financial Officer, discussed the Senate concerns about grant management metrics and what NSF already has in place as well as future plans to address these concerns, assuming additional resources are available. He also discussed the current and prior year financial statement audits, NSF's internal control activities, plans for investing in a new financial and property system to replace a strained and aging system, and NSF's implementation of the American Recovery and Reinvestment Act (ARRA).

Ms. Allison Lerner, NSF Inspector General, presented details about the Office of Inspector General's (OIG's) activities for ARRA and commented on NSF's efforts to address the open items of the management letter from last year's audit report.

In A&O Closed Session, the committee discussed the OIG FY 2011 budget, and A&O recommended approval by the full Board. *[The full Board subsequently approved the FY 2011 budget submission.]* (See 1.g.)

b. Committee on Education and Human Resources (CEH)

Dr. Camilla Benbow updated the committee on preparations for the upcoming "Next Generation of STEM Innovators Expert Panel Discussion" to be held at NSF on August 24 - 25, with an informal dinner and discussion on the evening of August 23. Secretary of Education, Mr. Arne Duncan, and inventor/entrepreneur, Mr. Dean Kamen, accepted the Board's invitation to participate, with Secretary Duncan providing the keynote address. The committee also discussed STEM education grand challenges and how NSB, working with NSF, can address both present needs as well as maximize NSF's position vis-à-vis emerging educational opportunities. Dr. Bruer, CEH chairman, informed the committee that he and Drs. Benbow and Kathryn Sullivan were holding informal discussions with NSF assistant directors and office directors to become more familiar with the broad spectrum of STEM activities underway at NSF and to better understand how the directorates and offices work together. The committee also discussed the idea of a possible decadal survey and what it might entail as well as the benefits and challenges.

The final agenda item focused on a new NSF initiative - the Task Force on Innovation and Learning - and its anticipated activities. Dr. Marrett briefed CEH on the current planning of the task force, noting that the task force: was just being formed; will be a 12-month activity; will be led by Dr. Wing; and will examine STEM education from both the learning side and from the innovation side. The task force will look at current NSF activities, consider future strategic investments, identify best practices, share perspectives across agencies, and determine where NSF fits within the context of STEM education within the Federal Government.

c. Committee on Science and Engineering Indicators (SEI)

Mr. Rolf Lehming, Program Director, Science and Engineering Indicators Program, Division of Science Resources Statistics (SRS) (SBE), summarized the Federal agency responses to the "Orange Book" draft of *Science and Engineering Indicators 2010*. He reported that seven agencies

sent reviews, mostly recommending technical and editorial changes that could be readily incorporated for the current volume, and outlined proposed responses to several substantive comments.

Dr. Louis Lanzerotti, SEI chairman, summarized the Board reviews that had been submitted. He noted that Chapter 7 (Science and Technology: Public Attitudes and Understanding) had been revised in response to Board concerns and that SEI needed an opportunity to consider forthcoming and newly received responses to this draft from additional Board Members. SEI voted to recommend that the Board approve the other chapters in the Orange Book draft for *Indicators* 2010, subject to final edits approved by the Board Chairman and SEI chairman. [*The full Board subsequently approved the "Orange Book," except for Chapter 7, as indicated above.*] (See 1.h.)

After discussion of the draft of the *Indicators* Digest of Key Science and Engineering Indicators 2010, the committee voted to recommend that the Board approve the Digest "stories," subject to final edits approved by the Board Chairman and SEI chairman. A draft of the printed Digest, following the format that the committee had previously reviewed and approved, is expected to be available in mid-October 2009. [*The full Board subsequently approved the Digest "stories" as indicated above.*] (See 1.i.)

Drafts of the Companion Piece and the *Indicators* Overview were being developed. The Companion Piece will be a policy statement concerning "Globalization of Science and Engineering Research," and the Overview will be a policy neutral presentation focused on data bearing on globalization. Dr. Lanzerotti will be working with the Board's "Companion Piece Development Group" and NSBO staff to develop a discussion draft that would be suitable for SEI review in mid-October 2009. The Overview draft will be sent to Board Members for review in early September 2009.

d. Committee on Programs and Plans (CPP)

[Note: CPP Task Force on Sustainable Energy (SE) did not meet in August 2009.]

In CPP Open Session, Dr. James Collins, Assistant Director, Directorate of Biological Sciences (BIO), presented an information item on the status of the National Ecological Observatory Network (NEON), which is scheduled to undergo a final design review in the first quarter of FY 2010. NSF expects to bring two action items before the Board in early 2010 to complete final activities and begin construction.

Dr. Edward Seidel, Director, Office of Cyberinfrastructure (OCI), led a discussion on the status of NSF's data policy. NSF was in the process of examining its current data policy and began internal discussions on the many complex issues involved with data archiving and storage.

Dr. Tony Chan and Dr. Craig Foltz, Acting Division Director, Division of Astronomy, MPS, presented an update on the management and operation of the Gemini Observatory, which is a set of twin telescopes that together have access to the entire sky. NSF expects to bring an action item before the Board at the May 2010 meeting, focusing on extending the current Cooperative Agreement with the Association of Universities for Research in Astronomy (AURA), which currently manages Gemini.

In CPP Closed Session, the committee considered four action items and forwarded the following three to the full Board for approval:

- ◆ TeraGrid Extension - Bridging to XD to the University of Chicago;
- ◆ George E. Brown, Jr., Network for Earthquake Engineering Simulation (NEES) Operations FY 2010-FY 2014, Purdue University; and
- ◆ Approval of Construction Funding for the Advanced Technology Solar Telescope (ATST), Association of Universities for Research in Astronomy.

[The full Board subsequently approved the three award resolutions.] (See 1.c. – 1.e.)

The committee also heard two information items in Closed Session: (1) an update on an award for Operations for Future Coherent Light Source R&D and (2) an update on the Status of the Track-2 award.

CPP Subcommittee on Polar Issues (SOPI)

Dr. Karl Erb, Director, Office of Polar Programs (OPP), reported that a panel of experts would meet to review safety procedures in place at Summit Station, Greenland, in light of the recent accident there. Also, there will be a review next year of the Antarctic Program logistics and infrastructure. Additionally, Dr. Erb discussed a joint Greenland-US-Denmark science education event that was recently held in Greenland, and provided an update on the IceCube construction project with its DeepCore array.

Dr. Erica Key, Associate Program Manager, OPP, provided an overview of current Arctic modeling progress, including advancements using the Community Climate System Model (CCSM). It was shown that improvements to climate simulations require integration of many model components, including biological and human influences, as well as ice sheets and black carbon aerosols.

Lieutenant Colonel Mark Doll, USAF, reported on the impact of a proposed ban of heavy grade oils in the Antarctic on the U.S. Antarctic Program (USAP). This ban, which if adopted would become effective in July 2011, could lead to higher operating costs for two of the ships supporting the USAP.

e. Committee on Strategy and Budget (CSB)

[Note: CSB Subcommittee on Facilities (SCF) and the CSB Task Force on Cost Sharing (CS) did not meet in August 2009.]

In CSB Open Session, the CSB chairman, Mr. Arthur Reilly, provided an update on SCF activities since the last meeting. He reported that SCF reviewed existing background documents and a draft template for collecting information from the NSF directorates. SCF will meet by teleconference in late summer or early fall to reach agreement on what materials will be needed to conduct a review of the entire NSF portfolio of large facilities.

Dr. Bement provided an update on congressional actions on the FY 2010 budget request. The Agency Operations and Award Management (AOAM) account was highlighted as an area of concern, particularly with respect to future workforce capacity, as both the House and Senate had reduced that account by 6 percent below the FY 2010 request. A status update was also provided on the FY 2009 Appropriation and Recovery Act funding.

In CSB Closed Session, Dr. Bement described NSF plans for the FY 2011 budget submission to the Office of Management and Budget (OMB). The committee reviewed and discussed the proposed FY 2011 budget request for NSF, including the Board, and recommended approval by the full Board. *[The full Board subsequently approved the FY 2011 budget submission.]* (See 1.g.)

f. Task Force on the NSB 60th Anniversary (60ANN)

Dr. Galloway, 60ANN chairman, reported on the progress of plans associated with the NSB and NSF 60th Anniversary in 2010. The NSF 60th Anniversary Working Group, under the leadership of Dr. Marrett, submitted a proposal to the AAAS for a panel discussion of current and past NSF Directors. The proposal was accepted and the panel will discuss “The Future of NSF on its 60th Anniversary” at the AAAS annual meeting in February 2010. With acceptance of the panel proposal and in light of the current budget limitations, the original plan to have a symposium with NSF-funded researchers as part of the 60th Anniversary celebratory events will be curtailed. However, there may be opportunities for several of the researchers identified for the symposium to give presentations at NSF, NSB meetings, or other venues during the commemorative year.

The task force discussed other plans to commemorate the 60th Anniversary. OLPA will assist with press and media coverage of the events and activities in 2010, as well as several other efforts including: compiling a list of “Sensational 60” scientific discoveries, highlights of the NSB in the past 10 years, asking Congress to pass a joint resolution honoring NSF and NSB, developing a letter to be co-signed by congressional supporters and entered into the *Congressional Record*, and obtaining a letter of proclamation from President Obama or OSTP congratulating NSB and NSF.

[signed]

Craig R. Robinson
Acting Executive Officer

Attachment: NSB-09-42, NSB Calendar of Meetings, 2010

NATIONAL SCIENCE BOARD
CALENDAR OF MEETINGS

2010

February 3 - 4
(Wednesday – Thursday)

May 4 -5
(Tuesday – Wednesday)
[Annual Meeting and Awards Dinner]

August 25 - 26
(Wednesday - Thursday)

September 23 - 24
(Thursday - Friday)
[Annual Retreat and Visit]

December 1 - 2
(Wednesday - Thursday)