

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the July 28-29, 2011 Meeting

The major actions and approvals of the National Science Board (Board, NSB) and a preliminary summary of the proceedings at the Board's July 2011 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the July 2011 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 420th NSB Meeting (not in priority order):

- a. The Board authorized the NSF Director, at his discretion, to make an award to the University of Texas at Austin for support of *Enabling, Enhancing, and Extending Petascale Computing for Science and Engineering* (NSB-11-48).
- b. The Board approved the following schedule of meetings for calendar year 2012: February 2-3, May 3-4, July 17-18, September 19-20, and December 4-5 (NSB-11-46) (Attachment).
- c. The Board Chairman established the *ad hoc* Committee on Honorary Awards with Dr. Peterson, chairman, and Drs. Benbow and Stancell, members.
- d. The Board approved the "Orange Book" draft for *Science and Engineering Indicators 2012*, subject to final edits approved by the Chairman of the Board and the chairman of the Committee on Science and Engineering Indicators (SEI).
- e. The Board approved the STEM education high priority Horizon items recommended by the Committee on Education and Human Resources (CEH) (NSB/CEH-11-13) to forward to the NSF Director for consideration.
- f. The Board acknowledged and reaffirmed the delegation of authority to the Executive Committee* to act on behalf of the full Board between Board meetings to approve recommendations from the following:
 - ♦ Committee on Audit and Oversight (A&O) pertaining to the FY 2013 budget for the Office of Inspector General (OIG),
 - ♦ Committee on Strategy and Budget (CSB) pertaining to the FY 2013 budget for the National Science Foundation (NSF), and
 - ♦ Committee on Programs and Plans (CPP) pertaining to a high performance computing action.

- g. The Board approved the minutes of the Plenary Open Session (NSB-11-40) for the May 2011 meeting <http://www.nsf.gov/nsb/meetings/2011/0510/minutes.pdf> Minutes for the Plenary Closed Session (NSB-11-39) for the May 2011 meeting of the Board were also approved.

2. Board Chairman's Report

Dr. Ray Bowen, NSB Chairman, made the following announcements regarding recent Board Member nomination activities:

- ◆ Dr. Arnold Stancell was nominated by the President, and replaces Dr. Barry Barish for the Class of 2014.
- ◆ Dr. Claude Steele was nominated by the President, and replaces Dr. Elizabeth Hoffman, also for the Class of 2014.

Additionally, he congratulated Dr. Cora Marrett, who was confirmed by the U.S. Senate on May 26, 2011 to serve as the Deputy Director of the National Science Foundation.

The Board approved the 2012 calendar of Board meeting dates. (See 1. b. and Attachment) The Chairman also announced that the Board will soon be considering locations for next year's off-site meeting and retreat to take place September 19-20, 2012, which will come before the Board for discussion and approval at the December 2011 meeting. He asked Board Members to give suggestions to Dr. Michael Van Woert, Executive Officer and Board Office Director. The location of the upcoming 2011 off-site meeting and retreat will take place on September 13-14, 2011 in Tucson, Arizona.

The Board Chairman established the *ad hoc* Committee on Honorary Awards. (See 1.c.)

Dr. Bowen recognized Dr. France Córdova, who was awarded an honorary doctorate degree in June 2011 from the Ben-Gurion University of the Negev in Israel for her "leadership in fostering academic excellence, pluralism, equality, and social justice at Purdue University." He also recognized Dr. Patricia Galloway, who was asked to give the commencement speech in December 2011 at the South Dakota School of Mines.

Lastly, Dr. Bowen announced the departure of Mr. Michael Town, an Albert Einstein Distinguished Educator Fellow, who joined the Board Office in September 2010. Mr. Town will be returning to Redmond High School in the State of Washington to continue to teach Advanced Placement Environmental Science, and finish development of a high school course on Environmental Engineering and Sustainable Design, among other projects. Mr. Town supported CEH and conducted extensive research on STEM education issues.

3. NSF Director's Report

Dr. Cora Marrett, NSF Deputy Director, introduced the following NSF staff:

- ◆ Dr. Kesh Narayanan, Deputy Assistant Director, Directorate for Engineering (ENG) (as of June 20, 2011).
- ◆ Dr. Celeste Rohlfling, Deputy Assistant Director, Directorate for Mathematical and Physical Sciences (MPS) (as of May 22, 2011).
- ◆ Dr. Joanne Tornow, Deputy Assistant Director, Directorate for Social, Behavioral, and Economic Sciences (SBE) (on June 19, 2011).

Dr. Marrett reported that NSF anticipates making an award to the Human Frontier Science Program (HFSP) at the request of Office of Science and Technology Policy (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. U.S. representatives on the HFSP Board of Trustees are Dr. Joann Roskoski, NSF Directorate for Biological Sciences (BIO) and Dr. Sally Rockey of NIH. NSF will contribute \$2.3 million and NIH will provide \$7.6 million via an interagency agreement to NSF. This holds the U.S. contribution at \$9.9 million, level with the 2010 contribution. This is compared to almost \$30 million provided annually by Japan and the total HFSP budget of \$61 million.

For the congressional update, Dr. Marrett reported that the House Committee on Appropriations approved the FY 2012 Commerce, Justice, Science Appropriations bill. NSF received \$6.86 billion, which is equal to the agency's FY 2011 enacted current plan and \$907 million less than President Obama's FY 2012 request.

Since the May 2011 NSB meeting, NSF provided witnesses for three hearings at the request of the House Committee on Science, Space and Technology - Subcommittee on Research and Science Education.

- ◆ On July 26, 2011, Dr. Marrett testified on NSF's merit review process. The hearing examined the process of merit review in an effort to understand the strengths and potential weaknesses of the various processes used at different science agencies.
- ◆ On June 2, 2011, Dr. Myron Gutmann, SBE Assistant Director, testified on how NSF's investments in the social, behavioral, and economic sciences are necessary, innovative, and improve the daily lives of Americans.
- ◆ On May 25, 2011, Dr. Farnam Jahanian, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), appeared before joint House Science Committee Subcommittees. Dr. Jahanian spoke about the broader contributions that result from NSF's investments in cyber security research and education, and provided feedback on the CyberSecurity Research and Development Act of 2002.

Additionally, Dr. Marrett announced that on September 19, 2011, NSF will host a workshop and exhibition centering on the National Research Council's (NRC's) *Successful K-12 Stem Education* report. Representatives Frank Wolf and Chaka Fattah will speak at the opening session of the event, which will be held at Drexel University in Philadelphia, Pennsylvania. NSF will co-host the event with the Chairman and Ranking Member of the House Committee on Appropriations – Subcommittee on Commerce, Justice, Science, and Related Agencies.

4. Board Committee Reports

[Note: The Executive Committee (EC) did not meet in July 2011.]

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

In A&O Open Session, Ms. Allison Lerner, Inspector General (IG), and Ms. Martha Rubenstein, NSF Chief Financial Officer (CFO), discussed the progress in addressing audit findings on the use of contingency budgeting to manage costs in NSF construction projects.

Ms. Lerner then briefed the committee on the OIG leadership in interagency efforts to combat fraud in the Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR) program. Ms. Lerner also paid tribute to Dr. Peggy Fischer who is retiring after 12 years as Assistant IG for Investigations. The chairman also noted that the President appointed Ms. Lerner to serve on the new Government Accountability and Transparency Board.

Ms. Rubenstein's CFO update included information about the high volume of awards at the end of this fiscal year, the handling of FY 2010 audit issues, and the work to be done for the FY 2011 financial statement.

Dr. Marrett gave an update on Human Capital issues. She discussed three key threads, including the fact that the Office of Personnel Management (OPM) has pointed to NSF as a model agency for other agencies seeking to improve their practices. Dr. Marrett also discussed activities related to hiring veterans and NSF's work to become a model Equal Employment Opportunity agency.

The committee approved a procedural motion designed to expedite action on the OIG's forthcoming budget request. *[The full Board subsequently reaffirmed the delegation of authority for EC to act on behalf of the full Board to approve recommendations from A&O relating to the FY 2013 budget for OIG.]* (See 1.f.)

In A&O Closed Session, the committee heard the status of the Antarctic Support Contract recompetition from Ms. Rubenstein. Dr. Dedric Carter, Office of the Director, gave an update on the Director's working group on personally identifiable and sensitive information.

b. Committee on Education and Human Resources (CEH)

The committee approved a motion requesting that the Board forward to Dr. Subra Suresh, NSF Director, for consideration a list of Horizon Priority Action Items. *[The full Board subsequently approved forwarding the recommended items to the NSF Director for consideration.]* (See 1.e.)

The Committee heard from three discussants: Dr. Joan Ferrini-Mundy, Assistant Director, Directorate for Education and Human Resources (EHR); Dr. Timothy Killeen, Assistant Director, Directorate for Geosciences (GEO), and Dr. Lee Todd, Chairman of EHR's Advisory Committee. They spoke on NSF efforts to develop an agency-wide education strategic vision.

The meeting closed by recognizing the valuable contributions of Mr. Michael Town, who served as an Einstein Fellow in the Board Office for the past year.

c. Committee on Science and Engineering Indicators (SEI)

After hearing a summary of the Federal agency reviews of the "Orange Book," the penultimate draft of *Science and Engineering Indicators 2012*, the committee voted to recommend that the

full Board approve the “Orange Book” draft for *Indicators 2012*. [The full Board subsequently approved the “Orange Book” subject to final edits approved by the Board Chairman and the SEI Chairman.] (See 1.d.) Orange Book reviews made numerous constructive suggestions and did not raise any major concerns.

Mr. Rolf Lehming, Director of the National Center for Science and Engineering Statistics (NCSES), Science and Engineering Indicators Program, summarized the major themes of the Overview and the Digest, which are currently being developed. Both the Overview and the Digest will continue the emphases of past years, with particular attention to developments related to the recent worldwide recession. Dr. José-Marie Griffiths reported that the working group on the Companion Piece intends to address innovation, including how research and development fosters innovation and implications for the workforce. The group plans to have a teleconference soon to further develop its ideas.

Ms. Jeri Mulrow, NCSES, presented a demonstration of new Web-based functionality in the Indicators state data tool. Dr. Bowen reiterated his suggestion that *Indicators* include data on the declining percentage of state university budgets supported by state appropriations, and recommended that *Indicators* data be made accessible via an i-Phone applications.

d. Committee on Programs and Plans (CPP)

In CPP Open Session, the committee reviewed several information items provided in advance to the committee for review: the Joint Institute for Computational Science, Status of the Track 2B award to the University of Tennessee; the update concerning the NSF Business and Operations Advisory Committee’s Formation of a Subcommittee Regarding Implementation of the NSB Recompetition Policy; and two reports on the Deep Underground Science and Engineering Laboratory (DUSEL), including a prepublication summary of the NRC report, and a Department of Energy (DOE) report titled, *Office of Science - Review of Options for Underground Science*.

CPP also discussed the next steps for the CPP Program Portfolio planning process. A CPP working group met with NSF staff in early July 2011 to draft an outline for the process and discuss potential programs for review. CPP intends to finalize candidate program selections and a 2012 calendar for these activities by the December 2011 meeting.

Dr. Karen Cone, BIO Program Officer, provided the Annual Report on iPlant’s current activities and future plans. iPlant enables transformative plant science research through the use of a unified cyberinfrastructure.

Dr. Elizabeth Blood, BIO Program Officer, provided an update on the National Ecological Observatory Network (NEON) design and development activities and how FY 2011 and FY 2012 budget constraints may impact the project. She told the committee that the spectrometer instrument anticipates delivery 4-6 weeks ahead of schedule. NSF plans to bring an action item before the Board in December 2011.

Dr. Joy Pauschke, ENG Program Director, presented an information item to the committee on upcoming plans for the Network for Earthquake Engineering Simulation (NEES). An NRC workshop report was recently published, and a Science and Technology Policy Institute (STPI)

report is forthcoming by early 2012. NSF anticipates using these reports to plan for NEES beyond 2014, and will brief the committee on outyear plans in summer 2012.

Dr. Edward Seidel, MPS Assistant Director, provided an update on the Laser Interferometer Gravitational-Wave Observatory (LIGO) Data Management Plan. A two-phase framework has been agreed upon by both NSF and LIGO. The committee provided advice on the complex issue.

Dr. James Whitmore, MPS Program Director, provided an update on the IceCube Data Management Plan. He noted that the NSF-supported data will be made available in compliance with both NSF data policy and the Antarctic Treaty requirements.

Dr. Gary Schmidt, MPS Program Director, gave an update on the Gemini Cooperative Agreement including how the 2012 United Kingdom withdrawal will impact the international Gemini partnership and a search for a new Gemini Director. NSF plans to bring an action item before the Board in December 2011 regarding renewal of the Cooperative Agreement through 2015.

In CPP Closed Session, the committee heard one information item, an update on a pending High Performance Computing and reaffirmed the delegation authority of EC to act on this item. *[The full Board subsequently reaffirmed the delegation of authority for EC to act on behalf of the full Board to approve recommendations from CPP relating to this item.]* (See 1.f.) Additionally, CPP considered one action item and forwarded it to the full Board for approval: Enabling, Enhancing and Extending Petascale Computing for Science and Engineering at the University of Texas at Austin. *[The full Board subsequently approved the above award resolution.]* (See 1.a.)

CPP Subcommittee on Polar Issues (SOPI)

Dr. Karl Erb, OPP Director, reported on the status of the competition for the U.S. Antarctic Program support contract. Proposals for Nathaniel B. Palmer type services are under review by the prime contractor. Overall, IceCube is doing well: the full complement of detector strings is installed and the detector is working with 98.5 percent uptime. Dr. Erb also mentioned that December 14, 2011 will mark the 100th Anniversary of Roald Amundsen reaching the South Pole. A senior delegation from Norway is planning commemorative activities, part of which will be hosted by OPP. Dr. Erb noted that Dr. Norman Augustine was selected to chair the Blue Ribbon Panel charged with reviewing U.S. science support operations in Antarctica and the Southern Ocean.

Dr. Simon Stephenson, OPP Division Director, reported on the Interagency Arctic Research Policy Committee (IARPC). The recent move of IARPC to the National Science and Technology Council, together with the NSF Director continuing to chair the committee among other actions, should further interagency coordination.

Lastly, SOPI discussed the McMurdo Station resupply. The Swedish icebreaker, *Oden*, will not be available this year. If no other alternatives are available, contingency plans to reduce and conserve fuel will have to be implemented by mid-August 2011. OPP is exploring a number of alternatives and an update will be provided at the next SOPI meeting.

CPP Task Force on Unsolicited Mid-Scale Research (MS)

The task force held a successful workshop in June 2011 bringing together Board Members, NSF management and staff, members of the research community, university administrators, and representatives of other Federal funding agencies. Dr. Kelvin Droegemeier reported that the overarching principle that emerged from the workshop was that it is vital that scientists and engineers perform the “right size” research for the right science and shared some emerging themes as potential actionable items for NSF.

Dr. Suresh reiterated his concern about budgetary constraints and recommended that the task force determine the appetite of the community for mid-scale research with the understanding that NSF’s budget is a zero-sum game. The task force gave an update on its ongoing and future plans, including the development of a Web-based feedback portal. Board Members had several recommendations to improve the questions, including adding a question to gauge the research community’s desire for mid-scale research. Finally, the task force plans to have a draft report ready for task force review at the September 2011 retreat, and a final report ready for full Board review at the December 2011 meeting.

e. Committee on Strategy and Budget (CSB)

In CSB Open Session, Mr. Michael Sieverts, Director, Budget Division, Directorate for Budget, Finance, and Award Management (BFA), provided comparisons of the FY 2010 enacted level, FY 2011 request, and the FY 2011 enacted level. Mr. Sieverts highlighted key issues for FY 2011, including concern for the decreased funding level for the Major Research Equipment and Facilities Construction (MREFC) account. Mr. Sieverts reported on FY 2012 Appropriation activities, presenting a comparison of the FY 2012 House mark against the FY 2011 current plan and the FY 2012 request. Mr. Sieverts also reported on key upcoming dates relative to the NSF budget, including the August 2, 2011 deadline for the Nation’s “Limit of Borrowing Authority.”

CSB discussed draft policy recommendations prepared by the Task Force on Data Policies (DP), which will consider CSB suggestions and bring a revised version forward at the September 2011 meeting.

The CSB plans to meet via teleconference in August 2011 to review the FY 2013 budget submission to the Office of Management and Budget (OMB). CSB voted to reaffirm the EC’s authority to act on behalf of the full Board to act on a recommendation regarding the FY 2013 budget. *[The full Board subsequently reaffirmed the delegation of authority for EC to act on behalf of the full Board to approve recommendations from CSB relating to the FY 2013 budget for NSF.]* (See 1.f.)

In CSB Closed Session, Dr. Suresh presented information on the development of the FY 2013 budget.

CSB Subcommittee on Facilities (SCF)

In SCF Open Session, the subcommittee discussed the Portfolio Review that was performed in May 2011 and progress on the COMPETES Act Mid-scale Instrumentation report.

The subcommittee emphasized the importance of tracking full costs for new and existing facility projects and identifying trends that will help guide decisions. SCF stressed the need for the Portfolio Review to be synchronized with budget planning and decision making, and to take into account other assessment and planning activities.

The Executive Secretaries and Dr. Asha Balakrishnan, STPI, presented the status of data gathering for the Mid-scale Instrumentation report – including a summary of a literature review by STPI of documents related to mid-scale infrastructure and preliminary results of a recent survey distributed to NSF offices and directorates on mid-scale facilities. The next step in preparing the COMPETES Act report is to solicit the perspectives of NSF offices and directorates on approaches to meeting mid-scale facility needs across NSF.

In SCF Closed Session, the subcommittee reviewed and discussed the future MREFC projects presented at the May 2011 meeting, and discussed FY 2013 budget issues.

CSB Task Force on Data Policies (DP)

The task force reviewed a set of draft policy recommendations based on its findings to date, which included outcomes from a stakeholder workshop held in March 2011. CSB discussed the draft policy recommendations, where committee members suggested revisions. The task force will take the CSB member suggestions into account and bring a revised version forward at the September 2011 meeting. A final set of recommendations, along with a report, are expected to be complete by the end of the 2011 calendar year.

Dr. Seidel updated the task force on related activities of the NSF Working Group, including plans to prototype an approach for scholarly publications and data that has been designed to inform policy and implementation.

f. Task Force on Merit Review (MR)

Dr. Bruer summarized what had transpired since May 2011, after the Board approved the public release of the draft principles and revised criteria document to allow input from the internal and external NSF communities. On June 14, 2011, Drs. Bowen and Suresh issued a joint NSB/NSF Dear Colleague Letter (DCL), asking interested stakeholders to submit comments on the draft principles and revised criteria document. During the comment period (which ended on July 14, 2011) nearly 280 comments were submitted in response to the DCL, two NSF Town Halls were held. The task force agreed that it was important to take time to review the comments carefully, many of which contained detailed and thoughtful input, and did not attempt to finalize the criteria. The task force then discussed some of the major themes that had been raised in the comments, and in particular will be looking at ways to reframe the discussion of the principles underlying the Broader Impacts review criterion. The task force concluded its meeting by outlining a plan to continue its discussions via teleconference, with a goal of presenting a final report at the December 2011 Board meeting.

g. *ad hoc* Committee on Nominations for NSB Class of 2012-2018 (NOMS)

In NOMS Closed Session, the committee discussed the general timeline for reviewing and submitting nominee recommendations to the White House and reiterated their commitment to review candidates based on the published, Board-defined list of desired attributes. The need to diversify the make-up of the Board in such areas as discipline, gender, ethnicity, and geography was also restated. The recommended portfolio of candidates is expected to be finalized for delivery to OSTP in September 2011.

[signed]
Michael L. Van Woert
Executive Officer

Attachment:
NSB Calendar of Meetings, 2011 (NSB-11-46)

*Delegation of Authority to the Executive Committee (NSB-11-3), February 16, 2011, states that the Executive Committee “may act for the Board in those rare instances when immediate decision is required between Board meetings and when the necessary action is not within the authority of the Director of the National Science Foundation.”

NATIONAL SCIENCE BOARD

CALENDAR OF MEETINGS

2012

February 2 - 3
(Thursday - Friday)

May 3 - 4
(Thursday - Friday)
[Annual Meeting and Awards Dinner]

July 17 - 18
(Tuesday - Wednesday)

September 19 - 20
(Wednesday – Thursday)
[Annual Retreat and Visit]

December 4 - 5
(Tuesday - Wednesday)