

**APPROVED MINUTES¹
OPEN SESSION
436TH MEETING
NATIONAL SCIENCE BOARD**

National Science Foundation
Arlington, Virginia
May 6-7, 2014

Members Present

Dan E. Arvizu, Chairman
Kelvin K. Droegemeier, Vice Chairman**
Deborah L. Ball
Bonnie L. Bassler
Arthur Bienenstock
Ray M. Bowen
Vinton G. Cerf
Ruth David
Inez Fung**
G. Peter Lepage**
Alan I. Leshner
W. Carl Lineberger
Stephen Mayo*,**
Douglas D. Randall*
Geraldine Richmond
Anneila I. Sargent
Diane L. Souvaine
Arnold F. Stancell**

France A. Córdova, *ex officio*

Members Absent

Esin Gulari
G.P. “Bud” Peterson
Claude M. Steele
Robert J. Zimmer
Maria T. Zuber

¹ The minutes of the 436th meeting were approved by the Board at the August 2014 meeting.

*Absent from the reconvened Plenary Open Session held on May 7, 2014 at 11:00 a.m.

**Absent from the reconvened Plenary Open Session held on May 7, 2014 at 2:20 p.m.

The National Science Board (Board, NSB) convened in Open Session on Tuesday, May 6, 2014 at 11:30 a.m. with Dr. Dan Arvizu, Chairman, presiding (Agenda NSB-14-20, Board Book page 159). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 1: Presentations by Honorary Award Recipients

The American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellowships Program received the 2014 NSB Public Service Award – Group. The Board heard a presentation by Ms. Cynthia Robinson, Director of the Fellowships Program, on behalf of that group entitled, “More than 40 Years of Public Service, AAAS Science and Technology Policy Fellowships, 1973-2014” (Brief Biography: Board Book page 183).

Dr. Richard Tapia, recipient of the 2014 Vannevar Bush Award, gave a presentation to the Board, entitled, “Crisis in Higher Education: The Need for New Understanding and New Leadership.” Dr. Tapia is a Mathematician at Rice University Computational and Applied Mathematics Department (Brief Biography: Board Book page 182).

Dr. Arvizu adjourned this portion of the Open Session at 12:15 p.m.

The Board reconvened in Open Session on Wednesday, May 7, 2014 at 11:00 a.m. with Dr. Arvizu, Chairman, presiding (Agenda NSB-14-20, Board Book page 159). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 5: Presentation by Honorary Award Recipient

Dr. Arthur Caplan, recipient of the 2014 NSB Public Service Award – Individual, gave a presentation to the Board. Dr. Caplan is founding Head of the Division of Bioethics at the New York University Langone Medical Center, and spoke on bioethics in medicine (Brief Biography: Board Book page 182).

Dr. Arvizu adjourned this portion of the Open Session at 11:20 a.m.

The Board again reconvened – this time in Open Session on Wednesday, May 7, 2014 at 2:20 p.m. with Dr. Arvizu, Chairman, presiding (Agenda NSB-14-20, Board Book page 159). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

In his introductory remarks, Dr. Arvizu made the following acknowledgements and presentations:

Welcome Dr. Córdoba as NSF Director

Dr. Arvizu welcomed Dr. France Córdoba as the 14th Director of the National Science Foundation. On March 31, 2014, she was sworn in by Dr. John Holdren, Director, Office of Science and Technology Policy (OSTP), for a 6-year term. Dr. Arvizu stated that the Board was honored to have her as the NSF Director and looked forward to working with her.

Dr. Córdoba, an astrophysicist, was most recently the chair of the Smithsonian Institution Board of Regents and a Member of the National Science Board. Her distinguished career includes: President, Purdue University (2007-2012); Chancellor and Distinguished Professor of Physics and Astronomy, University of California at Riverside (2002-2007); Vice Chancellor for Research and Professor of Physics, University of California at Santa Barbara (1996 to 2002); and Chief Scientist, National Aeronautics and Space Administration (NASA) (1993-1996).

Recognition of Class of 2014

Dr. Arvizu also recognized Board Members of the Class of 2014. He expressed his thanks for their dedication and willingness to work with complex policy issues that the Board addressed during their term over the past 6 years. He stated that their service and leadership on behalf of the science and engineering enterprise and the Nation was exemplary and much appreciated.

Board Members of the Class of 2014 received award plaques honoring “achievements in promoting the progress of science and engineering.” Recognized were: Drs. Ray Bowen, Esin Gulari, Bud Peterson, Douglas Randall, Diane Souvaine, Arnold Stancell, and Claude Steele, as well as Dr. France Córdoba, who was a member of the Class of 2014 until she became NSF Director.

Dr. Arvizu briefly summarized the activities of the outgoing Board Members:

Dr. Bowen served as NSB Chairman from 2010 to 2012. Dr. Arvizu stated that it was hard to fill Dr. Bowen’s “shoes” as Board Chairman, and mentioned that he appreciated Dr. Bowen’s wisdom and looked upon him as the “Dean of the Board.” More recently, Dr. Bowen served as chairman of the Committee on Science and Engineering Indicators (SEI), which released the 2014 *Science and Engineering Indicators* publications.

Dr. Souvaine served as chairman of the Committee on Programs and Plans (CPP), the Committee on Strategy and Budget (CSB), and co-chair of the CPP Task Force on Unsolicited Mid-Scale Research (MS). She also served a term on the Executive Committee (EC).

Dr. Córdoba served as chairman of the Committee on Strategy and Budget (CSB). She also served as chairman of the *ad hoc* Committee on Honorary Awards (AWD) as did Dr. Peterson. Dr. Peterson served as chairman of the Committee of Audit and Oversight (A&O), and

Dr. Stancell served as vice chairman of A&O. Additionally, Dr. Stancell stepped in for other committee chairmen on numerous occasions.

Dr. Gulari served a term as Vice Chairman of the Board, and served as chairman of the *ad hoc* Committee on Nominating for NSB Elections (NOMCOM), as did Dr. Randall. Both Drs. Gulari and Randall also served on various Board committees. Lastly, Dr. Steele served as chairman of the Committee on Education and Human Resources (CEH).

Recognition of Dr. Cora Marrett

On behalf of the Board, Dr. Arvizu recognized the diligent efforts of Dr. Cora Marrett, who had served as Acting Director and Deputy Director in recent years, and presented her with a letter of appreciation.

This letter stated, in part, “Under extraordinary circumstances, you have been a cornerstone of leadership for the Foundation during several transitions, and you ensured continued progress... You have kept the Foundation and the science community focused on impending opportunities rather than short-term challenges and prospective tight budgets. Additionally, in spite of your demanding work schedule, you have made personal investments in the future by reaching out to young people to encourage the pursuit of science careers... The Foundation and our science community have benefitted greatly from your generous spirit. We appreciate your invaluable expertise, knowledge, perspectives, and collegiality. We look forward to continued and productive collaboration with you in your role as Deputy Director.”

AGENDA ITEM 11: Approval of Open Session Minutes, February 2014

The Board unanimously APPROVED the Open Session minutes of the February 2014 Board meeting (NSB-14-17, Board Book page 171).

AGENDA ITEM 12: Chairman’s Report

In the Chairman’s Introduction and during the Chairman’s Report, Dr. Arvizu announced and reported on several items.

a. Delegation of Award-Approval Authority to the Director

Regarding the topic of delegation of award-approval authority to the Director, the Chairman noted the Delegation of Award-Approval Authority to the Director Resolution (Board Book page 184), along with the list of Current Statutory Authorities and Obligations (Board Book page 185).

b. Common Core State Standards in Mathematics and English Language Arts

For the topic of the Common Core, which was popular in the media recently, he called on Dr. Córdova for information on this subject. She introduced Dr. Joan Ferrini-Mundy, Assistant Director, Directorate for Education and Human Resources (EHR), for an overview on common core standards and issues for the Board's attention.

Dr. Ferrini-Mundy reported that the Common Core State Standards in Mathematics and English Language Arts were the current phase of a long series of activity around K-12 standards based education from the 1980's. These were developed by the National Governors Association (NGS) and the Council of Chief State School Officers (CCSSO) beginning in 2009 without a direct Federal role in the development.

The two major goals of the Common Core State Standards in Mathematics are to create clearer and higher standards that (1) describe what students should know and be able to do in order to be ready for college or career at the end of high school; and (2) to ensure common outcomes across various jurisdictions. One of the major features of this movement is to look for equitable access to learning opportunities across the states, where previously there were major differences in expectations for students across the country.

The Standards were released after an elaborate development process in 2010 for state adoption. As of 2011, 45 states plus the District of Columbia adopted the Common Core State Standards in Mathematics. The Department of Education funded two consortia to develop the Common Core-aligned assessments of states that have come together with nonprofit groups to prepare the assessment tools that will then measure whether students are making progress towards these common standards. There is considerable controversy about the Common Core. She stated that it is complicated and it has multiple facets.

Dr. Ferrini-Mundy stated that teachers in 45 states plus the District of Columbia were expected to work with the Common Core State Standards in Mathematics. NSF sees proposals for work that will help to better understand and to address the challenges of implementation of Common Core and other standards in states that are not using the Common Core. As NSF does not have a special program around the Common Core, the proposals go through the standard merit review processes. Federal support that was provided for their development is in the form of the support that the Department of Education provided for the assessment work.

In response to a question on examples of Mathematics Common Core, Dr. Ferrini-Mundy indicated that the Common Core State Standards have many interpretations and do not prescribe curriculum or instructional approaches to ideas. One of the actual implementation issues is how to go from standards that say "here is what students should know and be able to do" to "what is the best way to effectively help learners get to these places." She added that watching how these assessments play out will be important as they are coming at a time when the standards have not been fully implemented. From the NSF perspective, the potential of standards to help to improve access to good learning is important.

c. Results of Board Elections

Dr. Arvizu announced the results of the Board Elections, which took place in the Plenary Executive Closed Session. The Board re-elected Dr. Arvizu as chairman and Dr. Droegemeier as Vice Chairman for the 2014 - 2016 terms. They will also serve as members of the Executive Committee (EC) from 2014 to 2016.

d. Annual Awards Ceremony and Dinner

The Board held the annual Awards Ceremony and Dinner at the Department of State's Diplomatic Reception Rooms on May 6, 2014. Dr. Arvizu stated that the event was one of the few opportunities of the Board to recognize the distinguished contributions of individuals and organizations to the advancement of science. The Board was also honored to receive a message from President Obama, which was presented by Dr. Holdren, OSTP Director.

The main purpose of the Awards Ceremony is to recognize the recipients of NSB 2014 honorary awards.

- Dr. Richard Tapia, Mathematician at Rice University's Computational and Applied Mathematics Department, received the Vannevar Bush Award for outstanding contributions toward the welfare of mankind and the Nation through public service in science and technology.
- Dr. Feng Zhang, a faculty member at the Board Institute of the Massachusetts Institute of Technology and Harvard University, received the Alan T. Waterman Award, which recognizes outstanding capability and exceptional promise for significant future achievements.

The following received the 2014 Public Service Award for contributions toward increasing public understanding of science and engineering.

- Dr. Arthur Caplan, Founding Head of the Division of Bioethics at the New York University Langone Medical Center, received the individual Public Service Award.
- The group Public Service Award was presented to the AAAS Science and Technology Policy Fellowships Program.

Dr. Arvizu stated that it was a joy and privilege to present these awards to these distinguished, talented people and organization. On behalf of the Board, he thanked the Board Office and NSF staff who contributed to the efficient operation of this event by managing the awards programs and orchestrating the ceremony and formal dinner.

e. Committee Announcements

Dr. Arvizu discharged the *ad hoc* Committee on Honorary Awards (AWD) with thanks to Dr. Ruth David, chairman, and Drs. Stephen Mayo and Douglas Randall, members - and Ms. Nadine Lynn who served as Executive Secretary.

He also discharged the *ad hoc* Committee on Nominating for NSB Elections (NOMCOM), with thanks to Dr. Douglas Randall, chairman, and Drs. Bonnie Bassler, Ray Bowen, and Vinton Cerf, members - and Ms. Ann Ferrante, who served as Executive Secretary.

f. Recognition of Board Members

Dr. Deborah Ball was elected to the American Academy of Arts and Sciences. [Dr. Ball is the William H. Payne Collegiate Chair, Arthur F. Thurnau Professor, Dean of the School of Education at the University of Michigan, Ann Arbor.]

Dr. Inez Fung was elected to the American Philosophical Society founded by Benjamin Franklin as well as the American Academy of Arts and Sciences, the world's largest general scientific society. [Dr. Fung is Professor of Atmospheric Science at the University of California, Berkeley.]

g. Board Office Staff Departure

Ms. Jean Pomeroy, a Senior Policy Analyst in the Board Office, retired on April 30, 2014, after 27 years with NSF and more than 20 years with the Board. She served as a valuable resource on how the Board conducted business through the years, and mentored staff on a number of processes and procedures. A tireless worker, she was involved with a number of projects through the years, especially the *Science and Engineering Indicators*. Dr. Arvizu thanked Ms. Pomeroy for her dedicated service, and wished her much happiness in retirement.

h. Public Service Recognition Week

Dr. Arvizu extended a heartfelt "thank you" to all the public servants at NSF. He stated that public servants provide diverse services with efficiency and integrity that are needed by the American people of their Government. He stated that the Board had the pleasure of witnessing firsthand those remarkable contributions and achievements. Even during these difficult times, NSF and NSB staffs continue working to find innovative solutions to complex issues.

He especially thanked the NSF management - the Assistant Directors, Office Directors, and staff - who have become increasingly engaged with the Board's activities. They have ensured that the Nation's science, engineering, and education communities are well served. He stated that he was hopeful that the positive relationship the Board has had with NSF in recent years will continue in the future.

Lastly, on behalf of all of the Board Members, the Chairman expressed appreciation for the Board Office staff, which skillfully work to support and guide 25 presidential appointees, and accomplish countless tasks.

i. Webcast of Board Meeting

The May 2014 Board meeting was Webcast and simultaneously available to viewers through the Internet. The Webcast included the Plenary Open Session of the full Board as well as the Open

Sessions of its committees. Available from the NSB and NSF Web sites:
<http://www.tvworldwide.com/events/nsf/140506/>.

AGENDA ITEM 13: Director's Report

In her first Director's Report, Dr. Córdova expressed her thanks for the support of Dr. Marrett; the Office of the Director staff, especially Ms. Kay Rison; the NSF Assistant Directors, and the Board Office staff. She acknowledged and thanked NSF public servants, and stated that she appreciated the cross-directorate activity and supportive attitude that fosters the agency.

Dr. Córdova reported on the following items:

a. NSF Staff Introductions

Dr. Jane Silverthorne began serving as Deputy Assistant Director, Directorate for Biological Sciences (BIO) on April 6, 2014. Dr. Silverthorne came to NSF in 2003 as a Program Director. In 2008, she was appointed Deputy Division Director, BIO Division Biological Infrastructure (DBI) and became Division Director, Division of Integrative Organismal Systems (IOS) in 2012. Prior to joining NSF, she was a Professor in the Department of Molecular, Cell, and Developmental Biology at the University of California, Santa Cruz. Dr. Silverthorne received her Ph.D. in Biochemistry from the University of Warwick, Coventry, UK.

Ms. Irene Qualters began serving as the Division Director, Division of Advanced Cyber-infrastructure (ACI), Directorate for Computer and Information Science and Engineering (CISE) on April 6, 2014. Ms. Qualters joined NSF in 2009 and served as ACI Program Director. Prior to joining NSF, Ms. Qualters served as Senior Vice President, Products at Silicon Graphics Inc. and Vice President, Software Engineering, AGEIA Technologies. Ms. Qualters received her M.A. in Computer Science from the University of Detroit.

b. NSF Staff Honors

The 2014 Samuel J. Heyman Service to America Medal (Sammie) finalists were announced. Dr. Scott Borg, Head, Antarctic Sciences Section, Division of Polar Programs (PLR) was named a finalist for the Career Achievement Medal. The Samuel J. Heyman Service to America Medals are presented annually by the nonprofit, nonpartisan Partnership for Public Service to celebrate excellence in Federal civil service. The Career Achievement Medal recognizes a Federal employee for significant accomplishments throughout a lifetime of achievement in public service. Dr. Borg is the first NSF staffer to be a finalist for a "Sammie" award.

Dr. John Wingfield, BIO Assistant Director, was elected as a member of the American Academy of Arts and Sciences.

c. Congressional Update

Since the last meeting of the Board in February 2014, Dr. Córdova was confirmed as NSF Director.

The House Science, Space, and Technology Committee's Subcommittee on Research and Technology passed H.R. 4186, the Frontiers in Innovation, Research, Science, and Technology (FIRST) Act, on March 13, 2014. Full committee consideration was expected, although the Act was still pending at the time of the meeting. This bill would reauthorize NSF for FY 2014 and 2015.

On April 9, 2014, the Senate Commerce, Science, and Transportation Committee reported out S. 2022, the Forensic Science and Standards Act of 2014, which will await Senate floor action. This bill authorizes forensic research activities at NSF as well as creates a coordinating office at OSTP.

In late April 2014, the House Appropriations Subcommittee on Commerce, Justice, Science and Related Agencies released the details of the NSF appropriation bill for FY 2015. The bill would provide NSF with \$7.4 billion, an increase of \$237 million over the current funding level, and \$154 million above the President's FY 2015 request. The \$237 million increase is coming from a subcommittee where its allocation is nearly \$400 million less than last year. In that context, it is a remarkable statement about the importance of NSF to the country. The full committee will take up the bill on May 8, 2014.

Also in late April 2014, Dr. Córdova testified before the Senate Appropriations Committee on the NSF contribution to driving innovation. Drs. Dan Arvizu, Arthur Bienenstock, and Kelvin Droegemeier represented the Board. Dr. Holdren as well as the heads of the National Institutes of Health (NIH), Department of Energy (DOE), and the Defense Advanced Research Projects Agency (DARPA) also testified. Additionally, 15 Senators attended the hearing, which gave a shared sense of the importance for ensuring adequate and predictable research funding.

d. Executive Committee Annual Report

Dr. Córdova, as chairman of the Executive Committee (EC), reported that the 2013 Annual Report of the Executive Committee was approved by the committee. She recommended that the Board accept the 2013 EC Annual Report, which covers the period from April 2013 to April 2014.

The Board unanimously ACCEPTED the 2013 Annual Report of the Executive Committee (NSB/EC-14-1, Board Book Addendum, Appendix A).

AGENDA ITEM 14: Open Committee Reports

[Note: The following committees and task force did not meet in May 2014: Executive Committee (EC), Committee on Education and Human Resources (CEH), and Task Force on Administrative Burdens (AB).]

Dr. Arvizu noted that most of the full Board were present during the committee meetings and that there were no concurrent sessions. In light of this, he asked each committee chairman to

submit a summary of their committee meeting for the record to be included as an attachment to the Plenary Open Minutes.

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

The report summary for A&O was provided to the chairman prior to the Plenary Open Session (Appendix B).

b. Committee on Science and Engineering Indicators (SEI)

Dr. Ray Bowen, SEI chairman, submitted a report summary for the record (Appendix C).

c. Committee on Programs and Plans (CPP)

Dr. Diane Souvaine, CPP chairman, submitted a report summary for the record (Appendix D).

Additionally, she thanked Dr. Roger Wakimoto, Assistant Director, Directorate for Geosciences (GEO), for bringing forth a portfolio planning discussion related to strategic planning in GEO while it was still in progress. She reminded Board Members that Dr. Wakimoto welcomes input and for comments to be e-mailed to Dr. Souvaine or to Ms. Sonya Mallinoff, CPP Executive Secretary, or to Dr. Wakimoto directly.

Dr. Souvaine also emphasized that CPP heard Board interest in the portfolio planning discussion about the broad social and behavioral science portfolio across NSF in all directorates, which will be a topic for the August 2014 meeting. Also, Dr. Kelly Falkner, Division Director for Polar Programs, presented an information item on the challenges and notable achievements in Antarctica.

Dr. Souvaine expressed her appreciation to co-Executive Secretaries, Ms. Sonya Mallinoff and Ms. Lisa Lewis, as well as Dr. John Veysey, CPP Board Office Liaison, for their exceptional dedication and wisdom.

d. Committee on Strategy and Budget (CSB)

Dr. Bonnie Bassler, on behalf of CSB, submitted a report summary for the record (Appendix E). Additionally, Dr. Bassler reported that the CSB approved the set of recommendations relating to the Subcommittee on Facilities (SCF) Annual Portfolio Review (APR). Based on this recommendation:

The Board unanimously APPROVED the recommendations of the 2013 Annual Portfolio Review (NSB-14-33).

CSB Subcommittee on Facilities (SCF)

Dr. Carl Lineberger, SCF chairman, highlighted the subcommittee's discussion and approval of the recommendations that accompany the 2013 APR, which were approved in CSB. He submitted a report summary for the record (Appendix F). Additionally, he thanked co-Executive

Secretaries, Dr. Saul Gonzalez, Robert Robinson, and Alexandra Isern as well as Dr. John Veysey, SCF Board Office Liaison, for all their efforts.

e. Task Force on Administrative Burdens (AB)

[Note: Although AB did not meet at the May 2014 meeting, the task force chairman reported to the Board on recent activities.]

Dr. Arthur Bienenstock, AB chairman, reported that the NSB report, *Reducing Investigators' Administrative Workload for Federally Funded Research* ([NSB-14-18](#)), was released on May 1, 2014, and was posted on the NSB Web site.

Prior to the release, Members of Congress and congressional staff were briefed on the report during 2 days of meetings on Capitol Hill. Also briefed, were staff from the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP). The findings and recommendations were presented at National Council of University Research Administrators (NCURA) and Council on Governmental Relations (COGR) meetings and discussed with presidents and chancellors from Association of American Universities (AAU) member institutions. The task force received favorable responses and encouragement in all these meetings.

Several news outlets reported on the release, including *Inside Higher Ed* and *The Chronicle of Higher Education*. In addition, statements in support of the report were released by the Presidents of the AAU, COGR, and the Association of Public and Land-grant Universities (APLU), and a press release issued by the Federation of American Societies for Experimental Biology (FASEB). The report was also highlighted at the American Association for the Advancement of Science (AAAS), Science and Technology Policy Forum in a speech by AAU President Hunter Rawlings. The report was distributed to associations representing researchers and research institutions and to vice presidents and chancellors for research at institutions with the highest research activity.

Dr. Bienenstock reported that while he and Dr. Droegemeier presented the rollout publication, the success owes a debt to the Board Office staff, in particular, Dr. Lisa Nichols, Dr. John Veysey, Ms. Nadine Lymn, and Dr. Michael Van Woert as well as the AB Executive Secretary, Mr. Jeremy Leffler.

He also noted that the congressional appropriators set aside \$1 million in the FY 2014 Omnibus Appropriations Act for a National Research Council (NRC) study on the impact of Federal regulations and reporting requirements on colleges and universities. The study will be undertaken by the NRC Committee on Science, Technology, and Law in conjunction with the Board on Higher Education and Workforce and will be led by Dr. Anne-Marie Mazza. NRC is expected to focus on research regulations, perhaps in concert with the AAU and similar organizations, extending the Board's findings, and providing an action plan for a high-level interagency intersector committee proposed by the Board and included in draft language in both House versions of the COMPETES Reauthorization.

A Senate task force formed by four senators on the Committee on Health, Education, Labor, and Pensions is expected to focus on regulations stemming from the Higher Education Act and the Department of Education generally. The AB chairman was encouraged by the positive feedback received from Congress and the executive office of the President, and anticipates ongoing discussions and participation in reform efforts on behalf of the Board.

AGENDA ITEM 15: Chairman's Remarks

In his closing remarks, Dr. Arvizu asked Board Members to e-mail him requests for committee assignment preferences.

As there were no further comments or business of the Board, the Chairman adjourned the Plenary Open Session at 3:05 p.m.

[signed]

Ann A. Ferrante
Executive Secretary
National Science Board

Appendixes:

- A: 2013 Annual Report of the Executive Committee (EC) (NSB/EC-14-1)
- B: A&O Report Submitted for the Record
- C: SEI Report Submitted for the Record
- D: CPP Report Submitted for the Record
- E: CSB Report Submitted for the Record
- F: SCF Report Submitted for the Record

**2013 Annual Report of the Executive Committee (EC)
National Science Board**

In accordance with the requirements of 42 U.S.C. § 1865(d), I hereby submit this annual report of the National Science Board (NSB) Executive Committee, as approved by the Executive Committee on May 24, 2014. This report covers the period from May 2013 through April 2014. In addition to her duties as NSF Deputy Director, Dr. Cora B. Marrett served as Acting Director of the National Science Foundation (NSF) and Chairman of the Board's Executive Committee from April 2013 to April 2014. Dr. France Córdova served as the Director of the NSF from the beginning of April 2014.

The elected Board membership of the Executive Committee during the past year was as follows:

Dr. Dan E. Arvizu, Board Chairman
Dr. Kelvin K. Droegemeier, Board Vice Chairman
Dr. Carl Lineberger
Dr. Anneila Sargent

Dr. Dedric A. Carter, the former Senior Advisor for Strategic Initiatives in the Office of the Director, served as Executive Secretary of the Executive Committee until the end of June 2013. Dr. Peter Arzberger, Senior Science Advisor, Office of the Director, served as Executive Secretary subsequently.

The Executive Committee met six times during this period, all by teleconference. The first meeting was held July 3, 2013 in closed session to discuss legislative matters. The Committee met on July 24, 2013 in open session to review provisional committee agenda topics for the upcoming August 15-16, 2013 NSB meeting. The Committee met on August 8, 2013 and September 12, 2013 in closed session to continue discussions on legislative matters. On January 31, 2014 the Executive Committee met in open session to discuss the February 25-26, 2014 meeting agenda. It voted to accept the proposed February NSB agenda with minor corrections as necessary to facilitate logistics. The Committee met on March 3, 2014 in closed session to discuss responses to legislative matters.

In addition to the formal meetings of the Executive Committee previously reported, the committee also held 20 email ballots. Seventeen of them were votes to close teleconferences or portions of meetings. Two ballots were votes to transmit the OIG Semi-Annual report to Congress in June and December 2013. The reports were submitted under the signature of the Board Chairman, Dr. Dan E. Arvizu. The final ballot was to approve the 2013 Annual Report of the National Science Board Executive Committee. Following that vote, this report will be submitted for publication.

The Executive Committee's powers and functions are based on a delegation of authority to it by the Board according to 42 U.S.C. § 1865(a). The Board's current delegation to the Executive Committee (Attachment B to NSB-99-158) authorizes the Executive Committee to approve awards on behalf of the Board when an 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.

/s/

Dr. France A. Córdova
Chairman
Executive Committee

**Committee on Audit and Oversight (A&O)
Meeting Summary Submitted for the Record**

Dr. Wanda Ward, Office Head, Office of International and Integrative Activities (IIA), and Dr. Steve Meacham, IIA Senior Staff Associate, provided a brief overview of the structure of the annual report on the NSF merit review process (Board Book Addendum). They noted that, in response to a request by NSB Members, this year's report included several figures that showed the proportions of proposals from and awards to various demographic groups. The report also included a summary of seven merit review pilot activities underway at NSF. The pilots are part of NSF's commitment to look for ways to continuously improve the implementation of the merit review process while preserving the quality and integrity of the merit review system. In addition, they highlighted key findings from the 2013 data on proposal and award trends, success rates, review methods, and reviewer capacity.

Committee members raised a number of issues for further consideration, including: the variation in success rates across individual divisions and programs and the impact of including exploratory, early-concept grants in the success rate for research proposals; the possible impact of declining success rates in driving promising researchers to pursue scientific careers abroad; the possible impact of declining success rates on geographic distribution of awards; and the role that technology has played in creating new possible approaches to peer review that are being explored by journals and philanthropic foundations, a development that NSF should track. NSF will follow up on each.

Ms. Allison Lerner, NSF Inspector General (IG), discussed an investigation of a Maryland professor who was convicted on seven counts of wire fraud, mail fraud, falsification of records, and theft. The professor created a company and made several false certifications and misrepresentations in a proposal submitted to NSF's Small Business Technology Transfer (STTR) program.

Mr. Sal Ercolano, Clifton Larson Allen and partner-in-charge of the NSF financial statement audit, presented an overview of the audit plan for FY 2014. Mr. Ercolano said that this year's audit is considered "high risk" due primarily to the challenge of implementing a new financial system and the impact it will have on the process of preparing the FY 2014 financial statement.

Ms. Martha Rubenstein, NSF Chief Financial Officer, affirmed that implementing the new NSF financial system was challenging and is further complicated by the requirements and timing of the FY 2014 financial statement audit (Board Book page 66). Additional experienced staff, from other parts of the agency and from other agencies, will be brought in to help with the spike in workload demands. She noted that the project is on schedule, on budget and that test data loads have been working out well. She has also briefed several Board Members on NSF's risk mitigation strategies, and both Dr. Kelvin Droegemeier and Dr. Ruth David praised NSF's approach and "thoughtful strategy" that will help NSF make the transition (Board Book page 68).

[In the committee vice chairman's opening remarks, committee members were reminded that they should have received an e-mail with the *Office of Inspector General Semiannual Report to Congress* as well as the NSF management response to the report (Board Book Addendum). In order to give committee members sufficient time to review the documents, committee members were asked to respond with their vote by e-mail to approve the management response no later than May 9, 2014.]

**Committee on Science and Engineering Indicators (SEI)
Meeting Summary Submitted for the Record**

Since the release of *Science and Engineering Indicators (Indicators) 2014* in February 2014, the 2014 State Data Tool and the SEI 2014 app have been released. Later this summer, an updated version of the STEM Education Data and Trends Online Tool will be released.

Ms. Jeri Mulrow, Deputy Director, National Center for Science and Engineering Statistics (NCSES), provided an update on the project to redesign *Indicators* as a primarily digital document. Ms. Mulrow presented the following changes for 2016:

- To deliver a digital version of *Indicators* to meet the Board's statutory January 15 delivery requirement.
- To provide a print capability to users; some key stakeholders will receive a printed copy. The printed version of the report may not be available by January 15.
- The *Indicators* website will support access through multiple digital platforms (computers, tablets, other touch-screen devices), so a separate app will not be necessary.
- The State Indicators content will be folded into the online, interactive State Data Tool.

Ms. Mulrow also discussed the technological, process and resource challenges that NCSES may face in moving to a digital environment. The staff will be evaluating all of these factors and will come back to the Board in August 2014 with an implementation plan. The staff expects that at a minimum, Digital *Indicators* will have a new look and feel, enhanced navigation and search capabilities, and a usable print version. Other enhancements could include better tools for finding related materials and topics across the website, interactive and new graphics, and a well-formatted print version.

Members suggested provisions need to be made for long-term digital archiving as they plan the project (including basic research funded by NSF that might be needed to address this complex problem), and that a flexible architecture should be built that will allow for the ability to add functionality or access in the future.

The committee also received an update on the companion report to *Indicators 2014*. Members were given a one-page summary of the companion report and a longer document outlining additional details. Members were asked to comment on these documents and the proposed approach to reframe the discussion on the STEM workforce. Drs. Vinton Cerf, Ruth David, and Dan Arvizu, members of the working group, offered more detailed discussion of the issues to be addressed in the report. Members supported the direction of the report and urged the group to consider the diversity/changing demographics issue, the complexities of the "STEM" definition, and data that would enable better analysis of long-term trends.

**Committee on Programs and Plans (CPP)
Meeting Summary Submitted for the Record**

Dr. Diane Souvaine began the meeting by drawing attention to the updated Calendar Year 2014 schedule of action and information items for Board Review (Board Book page 12). She also spoke briefly about the Major Research and Equipment and Facilities Construction (MREFC) process, highlighting the major components of the NSB involvement in the MREFC process, including the four points where CPP intersects with that process to provide oversight or approval (Board Book page 14).

NSB Information Item: National Solar Observatory (NSO)
(Presentation Book page 3)

In advance of the presentation, Dr. Souvaine reminded the committee members of the Board policy on recompetition, specifically that it states that time should be allowed for facilities to transition to “sustainable operations.” Dr. David Boboltz, Program Officer, Directorate for Mathematical and Physical Sciences (MPS), presented an update on the status of NSO. Dr. Boboltz provided a summary of the NSO’s current activities, which include construction of the Daniel K. Inouye Solar Telescope, that was formerly known as the Advanced Technology Solar Telescope (ATST). The Board has heard updates on that project a number of times over the last few years. He told CPP that the current cooperative agreement for NSO expires at the end of 2014, but that in accordance with NSB policy, it would not be recompeted during the construction of the Daniel K. Inouye Solar Telescope.

NSF anticipates bringing forward an action item for the renewal of the current cooperative agreement at the August meeting. This will allow the telescope to reach sustainable operations prior to recompetition of the agreement. Dr. Sargent requested that there be continuing discussion in advance of the action, regarding recompetition timing.

NSB Information Item: Division of Material Research (DMR) Briefing on the National Research Council Magnet Science Report
(Board Book page 17)
(Presentation Book page 14)

Dr. Mary Galvin, Division Director, MPS Division of Materials Research (DMR), presented a briefing on the National Research Council Magnet Science Report. Dr. Galvin highlighted how magnet science touches almost every field of science and also on research geared towards societal needs. She told the committee how the National High Magnetic Field Laboratory (NHMFL), is the leading facility in the world for this science. The National Research Council (NRC) report noted that this centralized facility is cost effective and critical for maintaining the competitive edge in magnet science.

The NRC report had several recommendations for magnet science, which were not prioritized; NSF anticipates that the MPS Advisory Committee that advises DMR will work with MPS to guide the prioritization. Board Members asked questions about collaborations with the National Institute of Standards and Technology (NIST) and the National Institutes of Health (NIH).

CPP Program Portfolio Discussion: GEO Vision: Strategic Planning Process in the Geosciences
(Board Book page 21)

CPP continued the ongoing series of Program Portfolio Planning discussions, with Dr. Roger Wakimoto, Assistant Director (AD), Directorate for Geosciences (GEO), taking the lead for this discussion. Dr. Wakimoto's presentation on "GEO Vision: Strategic Planning Process in the Geosciences" discussed both imperatives for GEO and the frontier areas where innovative science might be done. It was emphasized that this was a "draft" document and Board input was being actively solicited.

Drs. Inez Fung and Geraldine Richmond took the lead discussant roles. All other NSF ADs came to the table for a robust discussion. The social and behavioral aspects of GEO research were raised by several Board members. Dr. Anneila Sargent asked about how the Division of Polar Programs fits into the GEO Vision, and Dr. Arnold Stancell asked whether industrial research had provided any input. Dr. Souvaine reminded the committee that if anyone had any further input to share with GEO or NSF, they can submit their comments to Dr. Wakimoto, Dr. Souvaine, or Ms. Sonya Mallinoff, CPP Executive Secretary.

Upcoming Portfolio Planning Process Discussions

At the conclusion of the GEO Portfolio Planning discussion, the committee also took a few moments to introduce a more long-range view of the portfolio planning process. Dr. Peter Arzberger, Office of the Director, has been organizing a full calendar year of these sessions in order to help the committee anticipate discussions and assign CPP discussants ahead of time, as well as to assist NSF with workload balance.

As part of this more long-range planning process, NSF will present the agency's broad portfolio in the social and behavioral sciences, which spans all directorates, not just Social, Behavioral, and Economic Sciences in August; and later in the fall, there will be a discussion on STEM education.

Drs. Kelvin Droegemeier and Bonnie Bassler will lead a social/behavioral science discussion in August, and both expressed the vital importance of discussing NSF's broad research portfolio, as understanding human behavior is one of the great scientific challenges we continue to face. They noted that the Board is very interested in and supportive of research in social and behavioral sciences across NSF.

NSB Information Item: Polar Issues/Antarctic Update

CPP also heard an end of season report on the Antarctic Season. Dr. Roger Wakimoto, AD GEO, provided a brief introduction, and Dr. Kelly Falkner, Division Director for Polar Programs, presented information on this item.

**Committee on Strategy and Budget (CSB)
Meeting Summary Submitted for the Record**

Dr. Kelvin Droegemeier agreed to chair the Closed Session of the CSB as Dr. France Córdova assumed the position of NSF Director. Dr. Droegemeier thanked Dr. Córdova for her service as CSB chairman.

The committee approved the minutes from the February 2014 meeting. Dr. Córdova reported that the House Committee on Commerce, Justice and Science approved a \$7.409 billion budget for NSF for FY 2015. This is an increase of 3.2 percent over FY 2014 Enacted and \$154 million or about 2 percent above the current FY 2015 Request.

Dr. Córdova further reported that she had testified before the Senate Appropriations Committee along with representatives from other Federal funding agencies, and that there seemed to be shared concern on the state of research funding on both sides of the aisle.

Mr. Michael Sieverts, Director of the Budget Division, provided an update on the FY 2015 Budget (Board Book Addendum). He noted that the last time that the final appropriation was higher than the Request level was in 2004 – so it will be an unusual situation if the current appropriation passes. He also noted that there was no report language available at this time. The House marks for Major Research and Equipment and Facilities Construction (MREFC), the National Science Board (NSB), and the Office of Inspector General (OIG) remain unchanged from FY 2014 Enacted. The House mark for Research and Related Activities (R&RA) is up slightly, while Education and Human Resources (EHR) is down slightly. Agency Operations and Award Management (AOAM) is down but the additional funding for Future NSF was requested separately, so the slight reduction will not influence the move to the new building. The House marks are in line with NSF priorities. The Senate mark was expected in late May or early June 2014. It was unclear if October 1, 2014, the start of FY 2015, will bring a continuing resolution or a full year appropriation.

Dr. Carl Lineberger, chairman of the CSB Subcommittee on Facilities (SCF), reported that SCF discussed a set of recommendations developed in response to the Annual Portfolio Review (APR) and has requested a full vote on the recommendations (NSB/CSB/SCF-14-1, Board Book page 85). CSB voted to forward the recommendations to the full Board for a vote in Plenary Session.

**CSB Subcommittee on Facilities (SCF)
Meeting Summary Submitted for the Record**

The committee discussed the proposed 2013 Annual Portfolio Review (APR) recommendations (NSB/CSB/SCF-14-1, Board Book page 85), focusing on two: the recommendation to the Board to revisit its earlier guidance that NSF allocate 22 percent to 27 percent of its budget on research infrastructure; and the actionable part of the recommendation that information about facility projects be combined into two-page summaries. Members agreed that, in light of a changed budgetary environment, the guidance level should be reconsidered. Members also endorsed the value and importance of the two-page facility descriptions, the contents of which would be discussed more in closed session. SCF members then voted to approve the FY 2013 APR recommendations.

The session ended with a brief discussion of the 2014 Annual Portfolio Review. There will be an SCF teleconference to discuss lessons learned from the 2013 APR and to plan this year's document. SCF staff will be working on the document during the summer.