

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the May 13-14, 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 May 2009 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the May 2009 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval at the August 2009 meeting.

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

- a. The Board approved the minutes of the Plenary Open Session (NSB-09-28) for the February 2009 meeting (<http://www.nsf.gov/nsb/meetings/2009/0223/minutes.pdf>) Minutes for the Plenary Executive Closed and Closed Sessions for February 2009 meeting of the Board were also approved.
- b. The Executive Committee approved a resolution to close portions of the upcoming August 5-6, 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/2009/0805/closing.pdf>).
- c. Drs. Camilla Benbow and Ray Bowen were elected to 2-year terms, May 2009 – May 2011, as members of the Executive Committee.
- d. The Board authorized the NSF Director, at his discretion, to make an award to Associated Universities, Inc. for the Management and Operation of the National Radio Astronomy Observatory (NRAO), FY 2010-2015.
- e. The Board authorized the NSF Director, at his discretion, to make an award to the Consortium for Ocean Leadership for the construction and initial operation of the Ocean Observatories Initiative (OOI).
- f. The Board authorized the NSF Director, at his discretion, to make separate Research Infrastructure Improvement (RII) awards to the following Experimental Program to Stimulate Competitive Research (EPSCoR) jurisdictions: Hawaii, Kansas, Maine, Mississippi, South Carolina, and South Dakota.

- g. The Board approved the following schedule of meetings for calendar year 2010: February 3-4, May 4-5, August 25-26, and September 23-24. Meeting dates for December 2010 will be reviewed at the next Board meeting.
- h. The Board accepted the 2008 Annual Report of the Executive Committee as presented by the committee chairman, Dr. Arden Bement, NSF Director (NSB/EC-09-8) (Attachment 1).
- i. The Board approved a statement recognizing exceptional service by NSF staff under the pressures of the American Recovery and Reinvestment Act (ARRA) funding (NSB-09-49) (Attachment 2).
- j. The Board approved an NSB Prioritization Process for setting priorities (NSB/EC-09-11).
- k. The Board approved the topic for the Companion Piece to *Science and Engineering Indicators 2010*: “Globalization of Science and Engineering Research.”
- l. The Board approved the final report, *Building a Sustainable Energy Future, U.S. Actions for an Effective Energy Economy Transformation* (NSB-09-55), subject to additional comments from Board Members and approved by the Chairman of the Board, the CPP chairman, and the Task Force on Sustainable Energy co-chairmen.
- m. The Board Chairman discharged the *ad hoc* Committee for the Vannevar Bush Award with thanks to Dr. Kathryn Sullivan, chairman, and Dr. John Bruer and Mr. Arthur Reilly, members.
- n. The Board Chairman discharged the *ad hoc* Committee on Nominating for NSB Elections, informally know as the Elections Committee, with thanks to Dr. Jon Strauss, chairman, and Drs. Douglas Randall and Thomas Taylor, members.
- o. The Board Chairman announced the following members of the *ad hoc* Committee on NSB Nominations for the Class of 2010 – 2016: Dr. Alan Leshner, chairman, and Dr. Patricia Galloway and Mr. Arthur Reilly, members.
- p. The Board approved the transmittal letter and management response for the NSF Office of Inspector General, *Semiannual Report to Congress, March 2009*.

2. Board Chairman’s Report

Dr. Steven Beering, Chairman, introduced the newly appointed NSF Inspector General, Ms. Allison Lerner. Ms. Lerner joined NSF from the Department of Commerce where she acted as the principal legal advisor and managed that agency’s OIG staff attorneys and legal services. She received her law degree from the University of Texas, School of Law, and she is a member of the bar in both Texas and the District of Columbia.

The Chairman welcomed back to the Board Office Lieutenant Colonel Keaven Stevenson, USAR, after more than 5 years of active duty. He returned to the Board Office as the Office Administrative Manager.

At the recommendation of Drs. Kelvin Droegemeier, Patricia Galloway, and Douglas Randall, the Board approved a statement recognizing the efforts being performed by the NSF staff under the pressures of the Recovery Act funding (See 1.i.) (Attachment 2).

The Chairman announced that Drs. Camilla Benbow and Ray Bowen were elected to the Executive Committee for the 2009 – 2011 terms during Plenary Executive Closed Session (See 1.c.). The Board approved a schedule of meetings for calendar year 2010 (See 1.g.). Additionally, the Chairman had three committee announcements (See 1.m. – 1.o.).

Dr. Beering reported on the annual Awards Ceremony and Dinner at the Department of State's Diplomatic Reception Rooms, where the Board was honored to receive a message from President Barack Obama delivered by the Office of Science and Technology Policy Director, Dr. John Holdren. The following 2009 honorary award recipients were recognized for their distinguished contributions.

- ◆ Dr. Mildred Dresselhaus, Institute Professor of Physics and Electrical Engineering at the Massachusetts Institute of Technology, received the Vannevar Bush Award.
- ◆ Dr. David Charbonneau, Thomas D. Cabot Associate Professor of Astronomy at Harvard University, received the Alan T. Waterman Award.
- ◆ Dr. Roald Hoffmann, Frank H. T. Rhodes Professor of Humane Letters, Emeritus and Professor of Chemistry, Emeritus at Cornell University, received the individual Public Service Award.
- ◆ American Chemical Society's Project SEED (Summer Experiences for the Economically Disadvantaged) received the group Public Service Award.

The Chairman announced the following recent outreach efforts. The report, *Building a Sustainable Energy Future*, was released for public comment on April 14, 2009. Dr. Dan Arvizu, the co-chairman of the Task Force on Sustainable Energy, gave a radio interview with Federal News Radio regarding the Board's report on April 17, 2009. On April 21, 2009, Dr. Arvizu gave a presentation on the report to the Council of Energy Research and Education Leaders. Outreach efforts were also conducted by Dr. Craig Robinson. Last month, he spoke to the Coalition for National Science Funding on behalf of the Board and gave a presentation about NSB to Office of Science and Technology Policy (OSTP) staff on May 5, 2009. On May 4, 2009, Dr. Beering gave a talk on STEM Education to the Council of Scientific Society Presidents (CSSP) on behalf of the Board. Additionally, Dr. Jon Strauss, former chairman of the NSB Task Force on International Science, testified before the Subcommittee on Research and Science Education, House Committee on Science and Technology on March 24, 2009 on the important topic of science diplomacy.

The Chairman announced two honors bestowed on the NSF Director, Dr. Arden Bement. On April 20, 2009, Dr. Bement received the 2008 National Engineering Award at the American Association of Engineering Societies (AAES) 30th Annual Meeting. Additionally, on May 8, 2009, the Government of Japan presented him with the "Order of the Rising Sun, Gold and Silver Star" for his meritorious contribution to promoting cooperation and understanding between the U.S. and Japan in the science and technology field.

3. NSF Director's Report

Dr. Bement introduced Dr. Larry H. Weber as the new Director of the Office of International Science and Engineering (OISE), replacing Dr. Thomas Weber who retired in June 2008. He received his BS in biology from Brigham Young University, Hawaii Campus and his Ph.D. from Texas A&M University.

For the congressional update, Dr. Bement reported on the following recent hearings. On April 22, 2009, the House Small Business Committee held a hearing on the Importance of Technology in an Economic Recovery. Dr. Kesh S. Narayanan, Division Director, Industrial Innovation and Partnerships, Directorate for Engineering, testified for NSF. On March 12, 2009, the Senate Committee on Commerce, Science and Transportation held a hearing on climate Science – “Empowering Our Response to Climate Change,” and Dr. Timothy Killeen, Assistant Director, Geosciences Directorate, testified for NSF. On March 19, 2009, Dr. Cora Marrett testified for NSF at the House Science and Technology Subcommittee on Investigations and Oversight hearing on the American Recovery and Reinvestment Act, entitled “Follow the Money: Accountability and Transparency in Recovery Act Science Funding.”

On April 29, 2009, the House Science and Technology Committee approved three bills that would expand science coordination efforts within the federal government and promote international technology cooperation: H.R. 1709, the STEM Education Coordination Act, H.R. 2020, the Networking and Information Technology Research and Development Act, and H.R. 1736, the International Science and Technology Cooperation Act.

4. Board Committee Reports

a. Executive Committee (EC)

Dr. Bement, EC chairman, reported that this fiscal year, NSF is responsible for the oversight and expenditure of nearly \$9 billion. NSF will work closely with OSTP and the Office of Management and Budget (OMB) to support the very best science and education activities and to support the President's science and technology priorities. He provided an update on the recruitment of new Assistant Directors for the following directorates: Social, Behavioral, and Economic Sciences (SBE); Biological Sciences (BIO); and Mathematical and Physical Sciences (MPS).

Dr. Bement reported that EC held a closed teleconference on March 31, 2009 to consider two proposed funding actions on behalf of the Board. EC approved the following action items: Alaska Region Research Vessel (ARRV), University of Alaska – Fairbanks; and Flash Gordon: A Data-Intensive Computer, University of California at San Diego.

The committee endorsed the 2008 Annual Report of the Executive Committee, which summarizes the activities from May 2008 through April 2009. [*The full Board subsequently accepted the annual report.*] (See 1.h.) (Attachment 1)

The committee reviewed the NSB Prioritization Process ([NSB/EC-09-11](#)). The process was developed by EC with input from the Board and NSF staff and discussed at the February 2009 meeting. The committee noted the possible need for flexibility in the stated timeline, while

recognizing the potential difficulty of delays. EC approved the Prioritization Process and recommended approval by the full Board. [*The full Board subsequently approved the NSB Prioritization Process.*] (See 1. j.)

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

In A&O Open Session, Ms. Lerner presented the March 2009 *OIG Semiannual Report to Congress*, and Dr. Joan Frye, NSF Director's Office, discussed the draft NSF management response and data tables. The committee voted affirmatively to recommend that the full Board approve the draft transmittal letter and management response. [*The full Board subsequently approved the transmittal letter and management response.*] (See 1.p.)

Dr. James Lightbourne, Mr. Nicholas Proferes, and Ms. Beth Ann Velo presented the FY 2008 *Report to the National Science Board on the National Science Foundation's Merit Review Process*. The presentation included an overview of the report structure and highlighted new items in this year's report as well as updates on trends concerning funding rates, award size, people supported by research grants, and review methods.

Mr. Thomas Cooley, NSF Chief Financial Officer, discussed the start of the FY 2009 financial statement audit, follow up to the FY 2008 audit, and NSF's complex internal control process. He reported on NSF's plans to modernize the financial and property systems and integrate them into the core agency business processes. This will involve considerable investment and effort over the next few years. The payoff is enhanced accountability for a growing agency. The impact and challenges of American Recovery and Reinvestment Act (ARRA) funding and accountability requirements on NSF and its awardees were also addressed. Mr. Sal Ercolano, partner-in-charge of NSF's financial statement audit, presented an overview of the plans for FY 2009. The auditors would revisit issues appearing in the February management letter including contract monitoring, grant processing, and property and equipment accounting. ARRA will significantly impact the audit by introducing a 50 percent increase in volume during the second half of the year, and concern was expressed about NSF's ability to process so many awards in so short a time. He also noted NSF's upcoming IT security review, which will emphasize testing of U.S. Antarctic Program (USAP) system controls.

In A&O Closed Session, the committee discussed a personnel matter.

c. Committee on Education and Human Resources (CEH)

Dr. John Bruer, CEH chairman, called on Dr. Camilla Benbow for a brief update on the *Preparing the Next Generation of STEM Innovators* expert panel discussion to be held August 24-25, 2009. Invitations to prospective panelists have been sent and, to date, eight Board members have indicated that they intend to participate.

The remainder of the meeting was spent discussing CEH priorities for action during the coming year. Dr. Wanda Ward, Assistant Director (Acting), Directorate for Education and Human Resources (EHR), initiated the discussion with a brief presentation on *Meeting Education and Workforce Needs in Emerging STEM Areas*. Along with teacher education, broadening participation, and cyber-learning, this is an over-arching topic that is receiving enhanced focus within NSF's education investment portfolio. NSF's critical role as a leader in addressing the education and workforce needs of these emerging multi-disciplinary fields and the important role

of community colleges were specifically mentioned. Subsequent discussions focused on specific questions raised by Dr. Ward's presentation, as well as the role of the Board and CEH in addressing the education and workforce needs in emerging STEM areas. Facilitating inter-agency coordination for Federal STEM education investments, fostering partnerships that encourage adoption of appropriate education policies and classroom practices, promoting awareness of NSF's commitment to rigorous evaluation, and raising awareness of the need for education research to have measurable impact on classroom practice were all identified as being appropriate roles for CEH action.

Two main topics emerged as priority concerns for further committee action. The shifting of boundaries between formal and informal learning environments and the emergence of hybrid learning environments, enabled by technology and social networking capabilities, were viewed as exciting areas for further research. The second major theme concerned strategic planning for future investments in NSF's STEM education and workforce portfolio and the need to develop a coherent framework for packaging these issues as a budget priority.

d. Committee on Science and Engineering Indicators (SEI)

Chapter authors for *Science and Engineering Indicators 2010* summarized the Board and outside expert reviews of the draft *Indicators* chapters and presented their plans for revisions. Board Members discussed the planned revisions and other issues raised by the draft chapters.

The committee voted to recommend "Globalization of Science and Engineering Research" as the topic for the Board companion policy document that will accompany the 2010 *Indicators* to the full Board. Drs. Ray Bowen, Patricia Galloway, José-Marie Griffiths, Jon Strauss, and Mr. Arthur Reilly will work with Dr. Louis Lanzerotti, SEI chairman, and the NSB Office staff to prepare a draft of the companion piece. [*The full Board subsequently approved the above topic.*] (See 1.k.)

Mr. Rolf Lehming, Science Resources Statistics (SRS) Director of the Science and Engineering Indicators Program, SBE, updated the committee on the status of the 2010 Digest of Key Science and Engineering Indicators. He noted that Board Members had already reviewed the storyline for five Digest stories. Dr. Lanzerotti asked SRS to prepare a sixth story, describing the globalization of the overall science and technology enterprise. In preparation for the August 2009 meeting, the *ad hoc* working group on the Digest, consisting of Drs. Bement, Clough, Gulari, Lanzerotti, and Leshner, will continue to review draft Digest materials as they become available.

e. Committee on Programs and Plans (CPP)

In CPP Open Session, the committee heard six information reports. Dr. Joy Pauschke, Program Director, Division of Civil, Mechanical, and Manufacturing Innovation, Directorate for Engineering (ENG), presented an information item on the status of the recompetition for Network for Earthquake Engineering Simulation (NEES) Operations. A third year annual review of NEES found that operations for the second five year period should be recompeted. NSF expects to bring an action item before the Board at the August 2009 meeting, focusing on a cooperative agreement for NEES operations from 2010 to 2014.

Dr. Tony Chan, Assistant Director, MPS, and Dr. Zakya Kafafi, Division Director, Division of Materials Research, MPS, presented an update on the Award for Coherent Light Source Development. The Division of Materials Research is in the process of reviewing proposals

addressing an upgrade or replacement of the two existing NSF-supported synchrotron facilities that have been in operation for more than 20 years. NSF expects to bring an action before the Board in August 2009.

Dr. Chan and Dr. Jon Kotcher, Program Director, Division of Physics, MPS, presented an update on the progress of the design for the Deep Underground Science and Engineering Laboratory (DUSEL). NSF expects to bring an action item before the Board in August 2009, focusing on a Cooperative Agreement for DUSEL design that will lead to a Preliminary Design Review (PDR) targeted for December 2010.

Dr. Chan and Dr. Colby Foss, Program Director, Division of Chemistry, MPS, presented an information item on the ARRA Award for the Purchase of a 21 Tesla Magnet. MPS is currently reviewing proposals for the project and expects to formulate a plan in the next several months. NSF expects to bring an action item before the Board at the August 2009 meeting.

Dr. Jose Munoz, Deputy Director, Office of Cyberinfrastructure (OCI), presented an information item on the extension for the TeraGrid Award. The current TeraGrid award ends in March 2010. The TeraGrid Extension is required to continue operations and support from April 2010 until March 2011. NSF expects to bring an action item before the Board for an award recommendation for the TeraGrid Extension in August 2009.

Dr. Lance Haworth, Head, Office of Integrative Activities (OIA), presented an information item on the Academic Research Infrastructure (ARI)/Major Research Instrumentation (MRI) Program. The MRI Program supports the acquisition and development of major research instruments. The ARI program supports the repair or renovation of existing research facilities.

Finally, the committee discussed issues raised for committee consideration in FY 2009 and beyond, as well as a proposed revision to the Charge to the Committee.

In CPP Closed Session, the committee approved three action items, which were forwarded to the full Board for approval. *[The full Board subsequently approved the three award resolutions.]* (See 1.d. – 1.f.)

CPP Subcommittee on Polar Issues (SOPI)

Dr. Michael van Woert, Executive Officer, Office of Polar Programs (OPP), briefly described the rescue of a contract employee who became disoriented in severe weather a few miles from Summit Station and was missing for 56 hours. OPP has initiated an investigation to determine the facts and underlying causes of the event, which will be used to update procedures to prevent future occurrences.

Mr. Simon Stephenson, Division Director, Division of Arctic Sciences, OPP, presented a brief overview on international partnerships in the Arctic, focusing on the Arctic Observatory Network, data-handling and the social sciences. NSF's largest post-International Polar Year (IPY) international partnership, the Arctic Observing Network (AON), provides the data necessary for modelers to better understand climate change in the Arctic. Dr. Scott Borg, Division Director, Antarctic Sciences, OPP, summarized Antarctic science highlights from the 2008 - 2009 austral summer, noting numerous successes, including a highly successful IceCube installation season and topographic data of the Gamburtsev Subglacial Mountains.

Mr. Larry Rudolph, General Counsel, provided an update on domestic Antarctic liability legislation that must be enacted by the U.S. as a result of Annex VI to the Antarctic Treaty Protocol. This legislation would require private operators to respond to environmental emergencies caused by them or be held financially accountable.

CPP Task Force on Sustainable Energy (SE)

SE discussed the report, *Building a Sustainable Energy Future* (NSB-/CPP/SE-09-1), which was released for public review and comment for the period April 14 - May 1, 2009. Task force co-chairman, Dr. Arvizu, summarized the array of public comments received and the subsequent revisions to the draft report based on those comments. Draft report revisions highlighted the need for a more concerted energy efficiency and public action strategy and improved public-private partnerships in sustainable energy research, development, demonstration, deployment, and education (RD3E).

CPP approved a final sustainable energy report, *Building a Sustainable Energy Future: U.S. Actions for an Effective Energy Economy Transformation* (NSB-09-55), and recommended that the report be brought for full Board approval, subject to additional comments from Board Members and final approval by the task force co-chairmen, CPP chairman, and the Board Chairman. *[The full Board subsequently approved this final report, subject to the approvals stated above.]* (See 1.1.)

f. Committee on Strategy and Budget (CSB)

(Note: CSB Task Force on Cost Sharing did not meet in May 2009.)

In CSB Open Session, NSF staff discussed the status of long-range planning information. Dr. Bement provided the committee with an update on the FY 2009 ARRA funding and summary information about the FY 2010 Budget Request. Dr. James Collins, Assistant Director, BIO, and Dr. Thomas Peterson, Assistant Director, ENG, gave presentations on how these directorates plan to strategically invest ARRA funds in FY 2009.

In CSB Closed Session, NSF provided information to facilitate future CSB discussions and provide an overall framework for the development of the FY 2011 Budget. The committee agreed to a summer teleconference to continue budget development discussions.

CSB Subcommittee on Facilities (SCF)

In SCF Closed Session, the subcommittee met for the first time and reviewed their charge. NSF staff provided a high-level overview of the NSF facilities portfolio as well as a more detailed review of the Division of Ocean Sciences research facilities. The subcommittee will complete its first annual review of all facilities in May 2010, and will hold bi-monthly teleconferences in preparation for this review.

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

The task force addressed the progress of plans relating to the commemoration of the NSB and NSF 60th Anniversary in 2010. An NSF 60th Anniversary Working Group was formed and began work on a number of activities, including a proposal to American Association for the Advancement of Science (AAAS) for a panel of current and former NSF Directors to discuss the future of NSF at its annual meeting. The NSF Working Group will coordinate with the 60ANN on activities and events.

The Office of Legislative and Public Affairs (OLPA) has offered its assistance in efforts, which include: compiling a list of “Sensational 60” scientific discoveries, asking Congress to pass a joint resolution honoring NSB and NSF, developing a letter to be co-signed by congressional supporters and entered into the *Congressional Record*, and obtaining a letter or proclamation from President Obama or OSTP congratulating NSB and NSF.

[signed]
Craig R. Robinson
Acting Executive Officer

**2008 Annual Report of the Executive Committee
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 (Board, NSB) Executive Committee, as approved at the Executive Committee meeting on May 13, 2009. This report covers the period from May 2008 through April 2009. I served as Director of the National Science Foundation and the Board's Executive Committee chairman during the above time period.

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

Mark R. Abbott
Steven C. Beering
Patricia D. Galloway
Kathryn D. Sullivan ¹

The following served as Executive Secretary of the Executive Committee: from May to August 2008, Craig R. Robinson, Acting NSB Executive Officer; from August 2008 to April 2009, Clifford J. Gabriel, Acting Executive Officer, Mathematical and Physical Sciences Directorate.

The Executive Committee met 5 times during this period (May 2008, August 2008, December 2008, February 2009, and March 2009) at the National Science Foundation in Arlington, Virginia. Oral reports of its activities were made at meetings of the full Board and are reflected in the minutes of those meetings. The March 2009 meeting was a teleconference and was held in closed session.

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. The March 2009 meeting was the only occurrence during this time period where the Executive Committee acted on behalf of the Board.

/s/
Arden L. Bement, Jr.
Chairman
Executive Committee

¹ Dr. Sullivan served on the Executive Committee for the May 2008 meeting as National Science Board Vice-Chair. She was not re-elected to the Executive Committee until the August 2008 meeting. Therefore, Dr. Sullivan was not a member of the Executive Committee during the August 2008 meeting.

MEMORANDUM TO THE ENTIRE NATIONAL SCIENCE FOUNDATION TEAM

FROM: The National Science Board

SUBJECT: Recognition of Exceptional Service to Science and Engineering and the Nation

The National Science Board recognizes that you all are critical to the success of meeting the National Science Foundation's mission. Under normal circumstances you meet the enormous challenges involved in the whole process of funding research and its related activities, and this is often overlooked or not fully appreciated by the broader science and engineering community.

The Board also recognizes that you are now putting forth extraordinary effort to meet the monumental task required to deal with an almost doubling of work load with no additional help. We realize this takes extra dedication - you already are incredibly dedicated to the Foundation's mission. The Board recognizes this effort and we appreciate it and wish to thank you in advance for stepping up to meeting the opportunity the American Recovery and Reinvestment Act funds are providing.

Thank you all.

National Science Board Members

Steven C. Beering, *Chairman*, President Emeritus, Purdue University, West Lafayette, Indiana

Patricia D. Galloway, *Vice Chairman*, Chief Executive Officer, Pegasus Global Holdings, Inc., Cle Elum, Washington

Mark R. Abbott, Dean and Professor, College of Oceanic and Atmospheric Sciences Oregon State University, Corvallis, Oregon

Dan E. Arvizu, Director and Chief Executive, National Renewable Energy Laboratory (NREL), Golden, Colorado

Barry C. Barish,* Ronald and Maxine Linde Professor of Physics, Emeritus Director, Laser Interferometer Gravitational-Wave Observatory (LIGO), California Institute of Technology, Pasadena, California

Camilla P. Benbow, Patricia and Rodes Hart Dean of Education and Human Development, Peabody College of Education and Human Development, Vanderbilt University, Nashville, Tennessee

Ray Bowen, President Emeritus, Texas A&M University, College Station, Texas

John T. Bruer, President, The James S. McDonnell Foundation, Saint Louis, Missouri

G. Wayne Clough, Secretary, Smithsonian Institution, Washington, DC

France A. Córdoba, President, Purdue University, West Lafayette, Indiana

Kelvin K. Droegemeier, Associate Vice President for Research, Regents' Professor of Meteorology and Weathernews Chair, University of Oklahoma, Norman, Oklahoma

José-Marie Griffiths, Professor, School of Information and Library Science, University of North Carolina, Chapel Hill, North Carolina

Esin Gulari, Dean of Engineering and Science, Clemson University

Elizabeth Hoffman,* Executive Vice President and Provost, Iowa State University, Ames, Iowa

Louis J. Lanzerotti, Distinguished Research Professor of Physics, Center for Solar Terrestrial Research, Department of Physics, New Jersey Institute of Technology, Newark, New Jersey

Alan I. Leshner, Chief Executive Officer, Executive Publisher, Science American Association for the Advancement of Science. Washington, DC

George P. (Bud) Peterson, President, Georgia Institute of Technology

Douglas D. Randall, Professor and Thomas Jefferson Fellow, University of Missouri, Columbia, Missouri

Arthur K. Reilly, Senior Director, Strategic Technology Policy, Cisco Systems, Inc., Ocean, New Jersey

Diane L. Souvaine, Professor and Chair, Department of Computer Science, Tufts University, Medford, Massachusetts

Jon C. Strauss, President, Bainbridge Graduate Institute, Bainbridge Island, Washington

Kathryn D. Sullivan, Director, Battelle Center for Mathematics and Science Education Policy, John Glenn School of Public Affairs, Ohio State University, Columbus, Ohio

Thomas N. Taylor, Roy A. Roberts Distinguished Professor, Department of Ecology and Evolutionary Biology, Curator of Paleobotany in the Natural History Museum and Biodiversity Research Center, The University of Kansas, Lawrence, Kansas

Richard F. Thompson, Keck Professor of Psychology and Biological Sciences, University of Southern California, Los Angeles, California

Member *ex officio*:

Arden L. Bement, Jr., Director, National Science Foundation, Arlington, Virginia

Craig R. Robinson, Acting Executive Officer, National Science Board & National Science Board Office Director, Arlington, Virginia

*Consultant