

President's Council of Advisors on Science and Technology (PCAST)
FOURTH MEETING
March 12, 2010
MINUTES

National Academy of Sciences Building
Lecture Room
2100 C Street, NW
Washington, DC

Members Present: John P. Holdren (Co-Chair), Eric Lander (Co-Chair), Harold Varmus (Co-Chair), Rosina Bierbaum, Christine Cassel, S. James Gates Jr. , Shirley Ann Jackson, Richard C. Levin, Chad Mirkin, Ernest J. Moniz, Mario Molina, Craig Mundie, Ed Penhoet, William Press, Maxine Savitz, Barbara Schaal , Daniel Schrag, David E. Shaw

Members Absent: Christopher Chyba, Eric Schmidt, Ahmed Zewail

Staff: Deborah Stine, Mary Maxon

Public Attendance: Approximately 100 observers attended.

Video Webcast Archive: The archive of the video webcast is available at <http://www.ostp.gov/cs/pcast>.

The President's Council of Advisors on Science and Technology (PCAST) convened in open session at 8:30 am with Dr. Holdren, Dr. Lander, and Dr. Varmus presiding on Friday, March 12, 2010.

Agenda Item 1: Welcome and Overview of PCAST

Dr. Holdren, Dr. Varmus, and Dr. Lander, PCAST Co-Chairs, opened the meeting and welcomed the participants at 8:30 am.

Dr. Holdren began by listing missing PCAST members. Dr Holdren mentioned some recent PCAST working group projects. Dr. Holdren discussed President Obama's ongoing commitment to innovation strategy, science and technology to produce new jobs and OSTP's role in meeting those goals, and the President's ongoing involvement and engagement in science and technology issues. Dr. Holdren spoke of the importance of public-private partnerships in achieving President Obama's goals.

Rachel Leonard, General Counsel at OSTP, spoke on ethical and legal issues of relevance to PCAST. Specifically, Ms. Leonard stated that PCAST monitors and manages financial conflicts of interest of PCAST members, and that many members of PCAST have specific waivers in place under criminal conflict of interest law at 18 U.S.C. § 208 that allow their participation in matters where conflicts of an allowable type exist.

Agenda Item 2: International Food Security

Harold Varmus moderated this session. Dr. Robert Paarlberg, a Professor at Wellesley College, and a member of the Board of Agriculture and Natural Resources at the National Research Council of the National Academies, spoke about various topics including genetically modified foods and adaptation of new technologies in developing areas of the world, especially in Africa and South America, Asia, and acceptance of bio-fortified foods in development assistance programs.

Roger Beachy, the first Director of the National Institute of Food and Agriculture, US Department of Agriculture described the newly created research agency, NIFA, and the administration's attention to rural farming and agricultural innovation. Dr. Beachy mentioned NIFA's role as a supporter of extramural research. Dr. Beachy shared NIFA's areas of concern: climate change and bioenergy, food safety, nutrition and childhood obesity, and global food security. Dr. Beachy also spoke about the role of colleges and secondary schools in preparing the next generation of farmers in order to bolster domestic food safety.

PCAST members commented and asked questions of Dr. Paarlberg and Dr. Beachy. The discussion focused on issues such as the status of the global food supply, agricultural education, interagency and private partnerships and biotechnology.

The co-chairs adjourned this portion of the Open Session at 10:45 am.

PCAST reconvened in Open Session at 11:00 am.

Agenda Item 3: Overview of the National Science Board (NSB) Activities Related to PCAST Activities

John Holdren and Harold Varmus moderated the session. Dr. Steve Beering, NSB Chair, President Emeritus, Purdue University, and Dr. Louis Lanzerotti, Chair, NSB Science and Engineering Indicators Committee, Distinguished Research Professor of Physics, Center for Solar-Terrestrial Research, New Jersey Institute of Technology, spoke on various NSB activities of interest to PCAST.

Dr. Beering gave an overview of the NSB and described publications thought to be relevant to PCAST's efforts, such as Building a Sustainable Energy Future, a national STEM Action Plan, and a companion to Science and Engineering Indicators 2010, Globalization of Science and Engineering Research. Dr. Lanzerotti discussed some of the details of reports mentioned by Dr. Beering.

Government-wide recommendations from Building a Sustainable Energy Future included adopting sustainable energy measures throughout the U.S. Government, boosting R&D investment in sustainable energy, and supporting education and work force development in sustainable energy-related fields.

The Science and Engineering Indicators 2010 report was released in January, and Dr. Lanzerotti discussed some emerging issues that NSB believes should be brought to the attention of the President, the Congress and the public, such as the shifting of science and technology activities toward the Asian economies as Asian government investments continue to increase dramatically, and the loss of the U.S. share of worldwide high-tech goods exports as China and other East Asian economies increasingly dominate goods export.

Dr. Beering shared recommendations from NSB's STEM Action Plan, including a call for a Federally-coordinated STEM education approach, clear educational goals and mechanisms for assessment, and a call for early exposure of students to STEM concepts.

PCAST members commented and asked questions of the presenters. The discussions focused on issues such as STEM education and teachers' salaries, the economics of science and technology, public support for science, and public perception of scientists. PCAST members inquired about the records from the NSB STEM education meetings that were held around the country, and Dr. Beering agreed to share them

The co-chairs adjourned this portion of the Open Session at 12 pm.

PCAST reconvened in Open Session at 1:30 pm.

Agenda Item 4: Public Comment Session

PCAST heard from members of the public in person, via the web, and through written comments read by a staff member during this session. The following individuals provided oral comments to PCAST:

- Jonathan Hollander, Economy - Energy - Environment Foundation Founding Fellow
- Barbara Glen, Vice-president for Science and Regulatory Affairs at Crop Life America
- Karen Gala, Director of science policy, Agronomy Crop Soil Sciences Societies, and AFRI coalition
- James Brown, Assistant Director for Advocacy, American Chemical Society.
- Crispin Taylor, Executive Director of the American Society of Plant Biologists.

Numerous individuals provided written comments to PCAST that are posted on the PCAST website. Additional public comments were provided through the White House Facebook and Twitter webpages.

Agenda Item 5: PCAST Review of the National Nanotechnology Initiative Program Report

Maxine Savitz and Ed Penhoet co-chairs of the PCAST National Nanotechnology Initiative (NNI) Review, presented the findings and recommendations of the review..Before they began, Chad Mirkin, PCAST's

nanotechnology expert who served on the NNI working group, offered that although he did not have a formal financial conflict of interest that would prevent him from participating in the vote to approve the PCAST report and its recommendations, he planned to abstain from voting.

Dr. Savitz described the origin of the NNI which was started 10 years ago in January of 2000, by President Clinton, and went on to say that in 2010 the program consists of 25 agencies and has a total Federal investment of approximately \$12Billion. Dr. Savitz highlighted three main areas of the report on NNI to PCAST: program management, program outputs, including research and products outputs, and environmental, health and safety programs.

Dr. Penhoet discussed the current status of the nanotechnology industry globally. Dr. Penhoet mentioned that the U.S. is the world leader in nanotechnology and commercialization, but that that lead may be transient. Dr. Penhoet presented data from the report that shows that the rate of growth of investment in Europe and especially in Asia now exceeds the rate of growth in the United States.

Dr. Penhoet spoke about the status of education in nanotechnology. He discussed the continuing and significant loss of trained researchers from the U.S. in nanotechnology-related areas, stating that one third of the advanced degree holders in this field who come to the U.S. from elsewhere go back to their home countries after graduation despite a preference to stay in the U.S.

Dr. Penhoet then laid out the main recommendations from the report:

- Increase the funding for nano-manufacturing research, while maintaining the support for basic research.
- Strengthen the NNCO, the NNI coordinating entity, with additional funds, and a broader mandate
- Require that metrics be developed to track benefits of nanotechnology, such as job creation
- Develop a cross-agency strategic plan that links environmental, health and safety research with knowledge gaps and decision-making needs.
- Develop a plan to expedite the citizenship review process for those who receive advanced degrees in science and engineering in this country.

PCAST Members then asked questions regarding the development of appropriate metrics to track progress, agency roles in gathering of statistical data, expediting the citizenship process, nano-manufacturing, and attracting interest in nanotechnology education. Amendments to the recommendations were made, and a motion was made and seconded to approve the report pending the suggested revisions. PCAST approved the report with no opposing votes and one abstention.

Dr. Holdren, Dr. Lander, and Dr. Varmus adjourned the meeting at 3:00 pm.

Respectfully Submitted:

[signed]

Deborah D. Stine
Executive Director
President's Council of Advisors on Science and Technology

[signed]

Mary E. Maxon
Deputy Executive Director
President's Council of Advisors on Science and Technology

Approved:

[signed]

John P. Holdren
President's Council of Advisors on Science and Technology

[signed]
Eric Lander
Co-Chair
President's Council of Advisors on Science and Technology

[signed]
Harold Varmus
Co-Chair
President's Council of Advisors on Science and Technology

Attachments:

Appendix A: Powerpoint presentations

Appendix B: Written Public Comment