

**President's Council of Advisors on Science and Technology (PCAST)
SEVENTH MEETING
September 2, 2010
MINUTES**

Keck Center of the National Academies

Room Keck 100
500 5th Street, NW
Washington, DC

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

Members Absent: Chris Chyba and Eric Schmidt

Staff: Deborah Stine, Mary Maxon, Gera Jochum, Meredith Lane

Public Attendance: Approximately 50 observers attended.

Video Webcast Archive: The archive of the video webcast is available at www.whitehouse.gov/ostp/pcast.

The President's Council of Advisors on Science and Technology (PCAST) convened in open session at 10:00 am with Dr. John Holdren and Dr. Eric Lander presiding on Thursday, Sept 2, 2010.

Agenda Item 1: Welcome from PCAST Co-Chairs

Dr. Holdren, and Dr. Lander, PCAST Co-Chairs, opened the meeting and welcomed the participants at 10:00 am.

Dr. Holdren mentioned this has been the most energetic and productive PCAST in history. He noted that the President thinks Science and Technology can solve economic and social challenges and is one of his highest priorities.

Dr. Lander thanked the members for their hard work and productivity.

Agenda Item 2: Computer Science and Information Technology

Dr. Holdren introduced Dr. Jeanette Wing, President's Professor of Computer Science of Carnegie Mellon University. Dr. Wing shared some background about computer science in general and commented on a number of areas relevant to the review of the National Information and Technology Research and Development (NITRD) program being done by PCAST.

Among the specific areas of focus included education, coordination between agencies at the federal level, economic prosperity, and national security. Dr. Wing discussed how computer science should play a prominent role in STEM education. She suggested that computer science has many applications for energy, healthcare, and education for which the federal government can provide funding and with which agencies can coordinate more closely. Dr. Wing also mentioned that advances in computer science have broad and increasing applications for economic growth and prosperity as well as national security.

Following Dr. Wing's remarks, PCAST members engaged her in discussion. The first question related to education. Specifically, there was a discussion on what grade levels should include computer science in the curriculum and how teachers should teach this technology that is constantly growing and updating. Other questions focused on standards in education, experimentation by the computer science community to show results, cybersecurity, and physical limits of computation.

Agenda Item 4: Public Comment

PCAST heard from members of the public in person and via the web. The following individuals provided oral comments to PCAST:

- Francesca Grifo, *Senior Scientist and Director, Scientific Integrity Program, Union of Concerned Scientists*
- John L. McCormick, *President, Energy Policy Center*
- David Mog, *Private Citizen*
- Kirsten Moore, *President, Reproductive Health Technologies Project*
- Ana Prados, *Private Citizen*
- Brien A. Seeley, M.D., *President, CAFE Foundation*
- Susan F. Wood, *Private Citizen*

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

The co-chairs adjourned this portion of the Open Session at 11:40 am.

PCAST reconvened in Open Session at 2:00 pm.

Agenda Item 4: Science, Technology, Education, and Mathematics Education (STEM) Study Update

The Science, Technology, Education, and Mathematics Education (STEM) working group Co-Chairs, Eric Lander and Jim Gates, presented the "Prepare and Inspire: Science, Technology, Engineering, and Math (STEM) Education for America's Future" report to PCAST. Among the issues discussed in that report are coordination of federal activities in STEM education; teacher recruitment, preparation, professional

development, and retention; STEM-focused schools; and preparing and inspiring students to enter STEM-related fields and to use STEM knowledge in their everyday lives.

PCAST members asked questions on topics such as using knowledge gained from social sciences research as to how people learn to enhance STEM education, interagency coordination, and informal STEM education conducted outside of schools at museums, afterschool programs, and so forth. After a series of questions and general discussion regarding the report by PCAST members, a motion was made and seconded to approve the report pending the suggested revisions. PCAST members unanimously approved the report.

Agenda Item 5: Energy Technology Innovation System Study Update

Ernie Moniz and Maxine Savitz, co-chairs of the PCAST Energy Technology Innovation System working group, presented the findings and recommendations within the report, "Accelerating the Pace of Change in Energy Technologies through an Integrated Federal Energy Policy," to PCAST. General recommendations for the Federal Government included establishing a Quadrennial Energy Review (QER), increasing the annual energy RDD&D funding to \$16 billion, generating \$10 billion of the \$16 billion through new revenue sources, realigning energy subsidies and incentives, enhancing the Federal Government's ability to purchase new energy technologies, and reestablishing the Committee on International Science, Energy, and Technology (CISET). General recommendations for DOE included developing and implementing an internal energy technology QER, allocating \$12 billion for RD&D, exercising authorities to align internal processes and organization with energy objectives, establishing a DOE Training Grant Program, and initiating a multidisciplinary social science research program.

After discussion with PCAST members, a motion was made and seconded to approve the report pending the suggested revisions. PCAST members unanimously approved the report.

Dr. Holdren and Dr. Lander adjourned the meeting at 3:30 pm.

Respectfully Submitted:



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



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

Approved:



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



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

Attachments:

Appendix A: PowerPoint Presentations

Appendix B: Written Public Comments