

**President's Council of Advisors on Science and Technology (PCAST)
EIGHTH MEETING
November 4, 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), William Press (Vice Chair), Maxine Savitz (Vice Chair), Rosina Bierbaum, Christine Cassel, Chris Chyba, S. James Gates Jr. , Shirley Ann Jackson, Richard C. Levin, Chad Mirkin, Mario Molina, Ernest J. Moniz, Craig Mundie, Ed Penhoet, Barbara Schaal, Eric Schmidt, Daniel Schrag, David E. Shaw

Members Absent: 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 www.whitehouse.gov/ostp/pcast.

The President's Council of Advisors on Science and Technology (PCAST) convened in open session at 9:00 am with Dr. Eric Lander presiding on Thursday, November 4, 2010.

Agenda Item 1: Welcome from PCAST Co-Chair

Dr. Lander, PCAST Co-Chair, opened the meeting and welcomed the participants.

Dr. Lander introduced two newly appointed PCAST Vice Chairs, William Press and Maxine Savitz. He mentioned this has been a productive PCAST. He noted that the sessions today will lead to important future PCAST studies.

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

Agenda Item 2: National Academies Study: *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*

Dr. Lander introduced Dr. Charles Vest, President of the National Academy of Engineering and President Emeritus of the Massachusetts Institute of Technology, who was to share information regarding a 5-year update of a National Academies report *Rising Above the Gathering Storm* entitled *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*. Dr. Vest began his presentation by not only discussing the Gathering Storm study but information on other National Academies Science, Technology,

Engineering and Mathematics (STEM) education studies and their relevance to the review of K-12 STEM education by PCAST.

The Gathering Storm report focused on K-12 STEM education, Federal basic research support, and U.S. competitiveness. Dr. Vest discussed ways proposed in the Gathering Storm report to improve K-12 STEM education. He indicated that the report recommended that the U.S. find ways to substantially and consistently increase the Federal support for basic research, particularly in physical science and engineering. Dr. Vest also mentioned that report recommended that the Federal government should take a number of steps to help ensure that the U.S. continues to get the best and brightest STEM students from around the world to study and work in the United States.

Following Dr. Vest's remarks, PCAST members asked him a number of questions. The first question related to prioritization. Specifically, there was a discussion about the need for incentives for both students and teachers. Other questions focused on Federal research dollars, innovation in teaching and Federal spending, and inspiration in teaching students.

Agenda Item 3: National Research Council Study: *S&T Strategy of Six Countries: Implications for the United States*

Maxine Savitz then introduced Dr. Dan Mote, recently retired President of the University of Maryland and Glenn L. Martin Institute Professor of Engineering. Dr. Mote shared some background about the National Research Council study *S&T Strategy of Six Countries: Implications for the United States*, and introduced John Gannon, Vice Chair of the Committee.

Among the specific areas of focus in the study were science and technology strategies of Japan, Brazil, Russia, India, China, and Singapore. Dr. Mote indicated that the report compared and contrasted these countries strategies with U.S. strategy and evaluated implications of these strategies to U.S. National security. Dr. Mote also mentioned, based on the committee's analysis, the importance of the national innovation environment and cultural factors to a country's science and technology strategy.

Following Dr. Mote's remarks, PCAST members discussed his presentation with him. There was a question about what types of cultural changes were made by countries to accommodate S & T strategy decisions in cases where that was reported to have happened.

Agenda Item 4: National Academies Study: *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at a Crossroads*

William Press introduced Dr. Freeman Hrabowski, President of the University of Maryland, Baltimore County. Dr. Hrabowski provided an overview of the National Academies report: *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at a Crossroads.*

Among the specific areas of focus included how to obtain more individuals who succeed in science and engineering from underrepresented groups. Dr. Hrabowski stated that while underrepresented minorities aspire to major in science and engineering as much as their counterparts, they are not

completing science and engineering undergraduate degrees. Dr. Hrabowski also mentioned how Federal agency coordinating efforts can help underrepresented minorities succeed and how it will be easiest to make an impact at the undergraduate level.

Following Dr. Hrabowski's remarks, PCAST discussed the report. The first question asked why the report emphasized undergraduates instead of focusing on earlier levels of education. Other questions focused on cultures of educational success and on other institutions that provide models of retention and success.

Agenda Item 5: Quadrennial Defense Review

Dr. Holdren then introduced Mr. Alan Shaffer, Principal Deputy Director for Defense Research and Engineering at the Department of Defense, who presented information regarding the science and technology aspects of the Department of Defense Quadrennial Defense Review and DOD's future plans related to science and technology.

Mr. Shaffer stated that Secretary Gates has four priorities for the Department of Defense, including taking care of its people, rebalancing the military, reforming how the military buys materials, and using technology to support troops in the field. Mr. Shaffer also mentioned improving delivery and cost of technology and preparing for an uncertain future.

Following Mr. Shaffer's remarks, PCAST members asked him a number of questions. The first question asked about what the Department of Defense expects for the future of basic research considering the political climate. Other questions focused on the role of information technology, supercomputing, climate change, and energy.

Agenda Item 6: JASON Study: *S&T for National Security*

Dr. Holdren then introduced Dr. Michael Gregg, Professor of Oceanography at the University of Washington, who made a presentation about the Jason study – *S&T for National Security*.

Dr. Gregg stated the need for basic research, especially with regards to science and technology in the field of national security. Dr. Gregg mentioned that basic research system within the Department of Defense is broken, including funding, direction, and management. Dr. Gregg also noted that research should be judged on the quality of discovery, project managers should be trained better, and graduate programs should be expanded.

Following Dr. Gregg's remarks, PCAST members asked him a number of questions. The first question related to tracking of the recommendations. Other questions focused on foreign faculty members and research, new oversight, and training of new graduates and researchers.

Agenda Item 7: Networking and Information Technology Research and Development (NITRD) Program Study Update

David Shaw and Ed Lazowska, co-chairs of the PCAST Networking and Information Technology Research and Development (NITRD) Program working group, presented the findings and recommendations of the report they co-chaired to PCAST. General findings included research and development efforts have been tremendously successful, the Federal government plays an important role in this process, and technological and societal changes make networking information technology (NIT) at the center of important priorities like improved healthcare, energy efficiency, transportation systems, National Security, education, and open government. Recommendations included additional funding of approximately \$1 billion per year, greater coordination, a publicly available database that lists NITRD grants, and for the creation of new multi-agency initiatives focused on NIT research in energy and transportation, NIT research in healthcare, and NIT research in cybersecurity.

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

Agenda Item 8: Public Comment

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

- Julian Goldman, *Medical Director, Biomedical Engineering, Partners HealthCare Director, Medical Device Interoperability Program at CIMIT and Massachusetts General Hospital*
- Matt Madia, *Regulatory Policy Analyst, OMB Watch*
- Terrie Rust, *Teacher*
- Beth Scott, *Regulatory Affairs Manager, American Association of University Women*
- Mike Town, *Einstein Fellow*

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.

Dr. Holdren adjourned the meeting at 12:30 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