

President's Council of Advisors on Science and Technology (PCAST)

ELEVENTH MEETING

May 19, 2011

MINUTES

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, Ed Penhoet, Barbara Schaal, Eric Schmidt, Daniel Schrag, Ahmed Zewail

Members Absent: Mario Molina, Ernest J. Moniz, Craig Mundie, David E. Shaw

Staff: Deborah Stine, Danielle Evers

Public Attendance: Approximately 40 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 9:00am with Dr. John Holdren and Dr. Eric Lander presiding on Thursday, May 19, 2011.

Agenda Item 1: Welcome from PCAST Co-Chairs

Dr. Holdren, PCAST Co-Chair, opened the meeting and briefly discussed science and technology activities in the 2011 Federal budget. He indicated that although the final 2011 budget did not reflect all of the President's requested increases for science and technology, most departments and agencies received small to modest cuts to their S&T budgets compared to FY2010. Dr. Lander also extended his welcome to the PCAST members and audience.

Agenda Item 2: NASA Research Activities

Dr. Holdren introduced retired Major General Charles Bolden, Jr., Administrator of the National Aeronautics and Space Administration (NASA). After thanking Dr. Holdren and Dr. Eric Lander, the PCAST Co-Chairs, Mr. Bolden presented an overview of the importance of and challenges to NASA's research and development (R&D) enterprise, which has decreased from 12% to 6% of the total NASA budget since the 1970's. Mr. Bolden emphasized the importance of this endeavor, as R&D efforts can improve technologies for future generations. In this discussion, Mr. Bolden introduced Dr. Robert Braun, NASA's Chief Technologist, and Dr. Waleed Abdalati, NASA's Chief Scientist.

Additionally, Mr. Bolden commented on NASA's commitment to the International Space Station (ISS), including an overview of the recent Endeavor Space Shuttle launch and existing experiments and personnel aboard the ISS. He also presented to the PCAST members the new vision for NASA and commented on NASA's commitment to science, technology, engineering and mathematics (STEM)

education, including his personal desire to expose America's youth to STEM fields and inspire them to pursue studies in these subject areas.

Following Mr. Bolden's remarks, PCAST members asked a number of questions. Among the issues discussed were budget constraints to NASA's manned spaceflight goals; STEM education efforts in community colleges and the NASA Space Grant Program; partnership projects and commitment to STEM education; NASA's commitment to climate monitoring activities given current and projected budget constraints; outreach efforts to the public and to legislators regarding NASA activities; and large challenges requiring "game changing" technologies, specifically the space radiation environment and current limitations on spacecraft propulsion.

Agenda Item 2: Public Comment

PCAST heard from no members of the public in person; however, numerous individuals provided written comments to PCAST. Several of these comments were read aloud by PCAST staff and all submitted comments are posted on the PCAST website.

Agenda Item 3: Update on Status of PCAST Advanced Manufacturing Study

Dr. Eric Lander provided the background for PCAST's advanced manufacturing study, and requested that the study co-chairs, Shirley Ann Jackson and Eric Schmidt, present the report for PCAST approval; Dr. Jackson and Dr. Schmidt then provided an overview of the report and its conclusions. The two primary recommendations of this report are to develop an across-government Advanced Manufacturing Initiative (AMI) and to promote advanced manufacturing as part of a large-scale U.S. innovation ecosystem. The proposed AMI would serve to coordinate advanced manufacturing efforts across relevant Federal agencies and would be spearheaded by the Departments of Commerce, Energy, and Defense with overall coordination by the Executive Office of the President. This Initiative would also serve to identify pressing technological challenges, support applied research in academia and industry, and support select public-private partnerships (PPPs) to advance technologies. Additional recommendations in this report include an R&D tax credit increase, continuing support for the growth of Federal R&D budgets, reform to the visa process for foreign Ph.D. students, and further strengthening of U.S. STEM education programs. PCAST members then posed a series of questions and comments focused on the proposed tax credit, AMI review processes, impact of the recommendations on small businesses, and relevance of international comparisons to U.S. data.

After these questions and comments were addressed, a motion was made and seconded to approve the report pending the incorporation of suggested revisions. PCAST members approved the report on this basis.

Agenda Item 4: NRC's Committee to Develop a Conceptual Framework for New Science Education Standards Study

Dr. Holdren introduced Dr. Helen Quinn, Chair of the National Research Council (NRC) Board on Science Education. Dr. Quinn presented background for the NRC project, which aims to develop a framework for a high-quality U.S. science education, which can then be developed into standards for education and incorporated on the state level. Dr. Quinn outlined the three dimensions of this framework, as presented in the NRC draft report: cross-cutting concepts, science as a set of practices, and core

disciplinary ideas. Challenges to the incorporation of standards developed from this framework include incorporation by the states, availability of curriculum materials, and tools for progress assessment.

Following Dr. Quinn's remarks, PCAST members asked a number of questions. Among the topics discussed were the incorporation of evidence-based learning into the framework, issues of assessment and performance expectations, educational difficulties in allowing argument in science discussions, incorporation of environmental science in K-12 education, and integrated teaching of science disciplines.

Dr. Holdren adjourned the meeting at approximately 12:00 pm.

Respectfully Submitted:



Deborah D. Stine
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