

EXECUTIVE OFFICE OF THE PRESIDENT
PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY
WASHINGTON, D.C. 20502

November 20, 2008

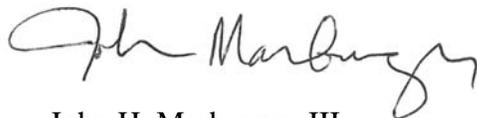
Dear successors to the President's Council of Advisors on Science and Technology:

The attached document is provided for the future co-chairs and members of the next President's Council of Advisors on Science and Technology (PCAST). It highlights elements of the formation of PCAST, operational procedures and a list of PCAST reports for the two terms of President George W. Bush.

The letter also provides a series of points you may wish to consider on critical issues identified by the members of the current PCAST. This document was developed through two separate meetings of PCAST members and outlines the core issues PCAST found in the creation, function and potential future role for the Council.

The role of science and technology in all aspects of our society, including the economy, security, energy and public health, will continue to grow in importance in the decision making of the next Administration, and beyond. This letter is designed to aid in the vital task before you and the PCAST offers their assistance during this transition period.

Sincerely,



John H. Marburger, III
Co-Chair



E. Floyd Kvamme
Co-Chair

This document is intended to inform the next President's Council of Advisors on Science and Technology (PCAST) of some of the considerations that were used to form and function as the PCAST during the two administrations of President George W. Bush.

COUNCIL FORMATION

In March 2001, President Bush named E. Floyd Kvamme as Co-Chair of PCAST. This advisory position did not require Senate approval. Dr. John H. Marburger, III was later named Director of OSTP, Science Advisor and Co-Chair of PCAST; he was Senate confirmed in November, 2001. Twenty two members (in addition to the two Co-Chairs) of the technology and science community were confirmed as PCAST members and PCAST was launched in a meeting with the President in December, 2001. These initial members are listed in the Appendix. The PCAST membership, selected by the Presidential Personnel Office, with input from OSTP members, the Co-Chairs, and other members of the administration represented a broad spectrum of the technology industry, academic leadership, a researcher, and some members who are also members of the National Academies. Two members had served on PCAST in the Clinton administration and two other members had served on the Councils of President Reagan and President George H. W. Bush.

The role of technology in the economy was a strong factor in choosing members in that technological developments were increasingly impacting the performance of the economy as well as policy decisions in virtually every sector of government. Thus, this PCAST was more technology based than previous Councils. Early in the first administration, the PCAST started work on a report to review America's position in Nanotechnology. Concurrently, the Congress was preparing legislation to fund the National Nanotechnology Initiative (NNI). In this legislation, an advisory committee to advise the President and report to the Congress was stipulated. The administration sought and the Congress agreed that PCAST could serve in that capacity. Thus, PCAST took on the added responsibility of performing the function of the National Nanotechnology Advisory Panel (NNAP) advising the President and reporting to the Congress with specific legislated report requirements.

In 2005, the President, in reauthorizing the President's Information Technology Advisory Committee (PITAC), a committee that was also required by legislation passed during previous administrations, assigned the responsibility for PITAC activities to PCAST. He also authorized PCAST to expand its membership to forty-five members to cover these new responsibilities. PCAST was immediately increased to thirty five members (including the two Co-Chairs) who provided additional expertise in the subjects covered by PITAC requirements with the thought that as future studies required, there would be room for additional appointments. In fact, the membership was maintained at thirty five members; these additional members are also listed in the attached Appendix.

As a result, PCAST, by the latter years of this Bush administration, performed external advisory activities in the areas of science and technology, nanotechnology and information technology.

OPERATIONAL PROCEDURES

From the beginning, the President and members of the administration both asked the PCAST to look at specific issues or to bring issues to their attention which might have a

bearing on technology or science developments. Virtually all activities though, pertained to the impact technology was having on the economy. This PCAST did not focus on any matters directly pertaining to the Department of Defense (with the exception of trying to stay abreast of activities with the Defense Advanced Research Projects Agency (DARPA)) or the CIA or other such agencies and did not have its members obtain any security clearances. Our reports focused more on continuing American leadership in technology matters and the policies necessary to maintain that leadership.

With the breadth of topics to study, subcommittees of PCAST members were formed to produce drafts of each of our reports which were then brought to the entire PCAST for review and revision before the PCAST, acting as a whole, approved the reports. Each subcommittee working on a report had one or two members who acted as chair of the report. These chair persons did most of the interfacing with the departments of the administration whose activities would be most impacted by the recommendations in the reports. Virtually all reports were informed by extensive contact with industry, academia as well as the departments of government.

To ensure that reports were well informed by persons active in the various subject areas, a technical advisory group (TAG) concept was used on several of the reports. In nanotechnology, for example, some forty five researchers in industry and academia were asked to be available to advise the nanotechnology subcommittee as it considered its recommendations. These TAGs were an invaluable source of current input to each of the reports where they were used. TAG members did not have to be selected by the lengthy process required in selecting active members of the PCAST. The TAG members never met in a physical meeting; their inputs were provided by email questionnaires and other direct or indirect contact with PCAST members.

By early agreement, reports were not lengthy but rather held to a model of having 30 – 50 pages with recommendations that were immediately actionable as “first steps” in moving in a recommended direction. (The Energy Report of 2005 and the Personalized Medicine and University-Private Sector Research Partnerships reports of 2008 exceeded these page limits.)

With one exception, all of our full committee meetings took place in Washington. The one exception was a meeting held in Ohio while we were studying State programs in science and technology and wanted to have an “on site” look at how the States were increasingly funding projects to improve their technology footprint. Subcommittees developing specific reports, however, met in many parts of the country to gain access to experts in the areas of study. It is our conclusion that this meeting approach was effective in gaining the proper audiences both for input to the reports and impact on those in the administration who would be receiving the recommendations.

OUR REPORTS

The following list shows each of the reports that this PCAST issued. In each case, the web address where the report can be found is shown.

Maximizing the Contribution of Science and Technology within the New Department of Homeland Security

September, 2002

Chair: Norman R. Augustine

http://www.ostp.gov/pdf/final_dhs_report_with_appendices.pdf

Assessing the U.S. R&D Investment

October, 2002

Chair: G. Wayne Clough

http://www.ostp.gov/pdf/final_rd_report_with_letters.pdf

Report on Building out Broadband

December, 2002

Chair: Marye Anne Fox

http://www.ostp.gov/pdf/final_broadband_report_with_letters.pdf

Improving Efficiency in the Nation's Electrical System

February, 2003

Chair: Steven G. Papermaster

http://www.ostp.gov/pdf/final_energy_report_with_letters.pdf

Technology Transfer of Federally Funded R&D

May, 2003

Chair: G. Wayne Clough

<http://www.ostp.gov/pdf/pcasttechtransferreport.pdf>

The Science and Technology of Combating Terrorism

July, 2003

Chair: Norman R. Augustine

<http://www.ostp.gov/pdf/terror2.pdf>

Sustaining the Nation's Innovation Ecosystems: Information Technology Manufacturing and Competitiveness

January, 2004

Chair: George Scalise

http://www.ostp.gov/pdf/finalpcastitmanuf_reportpackage.pdf

Sustaining the Nation's Innovation Ecosystems: Maintaining the Strength of Our Science and Engineering Capabilities

June, 2004

Chair: Robert J. Herbold

<http://www.ostp.gov/pdf/finalpcastsecapabilitiespackage.pdf>

Federal-State R&D Cooperation: Improving the Likelihood of Success

June, 2004

http://www.ostp.gov/pdf/fed_state.pdf

S&T Collaboration: Ideas for Enhancing European-American Cooperation

October, 2004

<http://www.ostp.gov/pdf/stcollaboration.pdf>

The National Nanotechnology Initiative: Assessment and Recommendations of the National Nanotechnology Advisory Panel

May, 2005

Chair: E. Floyd Kvamme

<http://www.ostp.gov/pdf/pcastreportfinal.pdf>

The Energy Imperative: Technology and the Role of Emerging Companies

May, 2006

Chair: E. Floyd Kvamme

http://www.ostp.gov/galleries/PCAST/pcast_energyimperative_final.pdf

Leadership Under Challenge: Information Technology R&D in a Competitive World

August, 2007

Co-Chairs: George Scalise and Daniel A. Reed

http://www.ostp.gov/pdf/nitrd_review.pdf

The National Nanotechnology Initiative: Second Assessment and Recommendations of the National Nanotechnology Advisory Panel

April, 2008

Co-Chairs: E. Floyd Kvamme and Nance Dicciani

http://www.ostp.gov/galleries/PCAST/PCAST_NNAP_NNI_Assessment_2008.pdf

Addendum to the National Nanotechnology Initiative: Second Assessment and National Nanotechnology Advisory Panel

July, 2008

<http://www.ostp.gov/galleries/PCAST/PCAST%20Addendum%20Letter.pdf>

Priorities for Personalized Medicine

September, 2008

Chair: M. Kathleen Behrens

http://ostp.gov/galleries/PCAST/pcast_report_v2.pdf

Energy Imperative: 2008 Update Letter

November, 2008

<http://www.ostp.gov/galleries/PCAST/PCAST%20Energy%20update-final.pdf>

University-Private Sector Research Partnerships in the Innovation Ecosystem

November, 2008

Co-Chairs: Steven G. Papermaster and Luis M. Proenza

RECOMMENDATIONS IN FORMING THE NEXT PCAST

Composition

The diversity in fields and representation from academia, the private sector and other organizations was felt to be well balanced in our PCAST, recognizing that it was established with the intent to focus more on technology development and impacts on economic competitiveness. There was a general sense that one or two additional active researchers or scientists would be beneficial as members of PCAST, leaving the final number ranging from 2-3 (while not increasing the total number of PCAST members).

Size

The history and rationale for the expansion in our PCAST membership are detailed in the formation section above. The consensus of the PCAST members is that this was appropriate at the time to assume these additional functions, however the size of PCAST is no longer optimal. While the majority of members believe these added responsibilities of PITAC and NNAP should be maintained, the total membership could be reduced to approximately 20-25 members. The TAGs should continue to be utilized to provide additional technical expertise, particularly in support of the PITAC and NNAP functions. About a quarter of our members, over time, became inactive. It would be very beneficial for OSTP to develop a replacement mechanism to more quickly transition those members who choose to no longer be active.

Non-defense focus

This PCAST was focused on technology related issues and the role of the private sector and science and technology developments impacting the economy and competitiveness. These, along with other issues, resulted in having less of a defense focus, even though some members had defense backgrounds. Therefore, our members were not required to obtain security clearances (although some members had clearances) and we did not focus on defense related issues, except for an early report on science and technology in the new Department of Homeland Security. Our members believed that defense issues are largely addressed by the Defense Science Board and other groups.

Length and types of reports and communications

As mentioned earlier, shorter reports were felt to have higher impact and provide a set of strategic level recommendations that were most appropriate for PCAST's role. Specific topics such as energy and personalized medicine warranted lengthier reports to address the range of technical and policy issues, but there was universal agreement concise reports were the best model and that they could be produced in the timeliest fashion.

Interactions with Administration and Executive Branch Agencies

PCAST had five formal meetings with the President to provide briefings and have discussions on reports that were under development or about to be released. While interactions with other offices in the Executive Office of the President and members of other agencies were more frequent in the first few years of PCAST's term, these decreased in later years. While individual members continued to have frequent interactions with executive branch agencies and members of the administration, few meetings were held with PCAST as a group. The members now feel these interactions should be increased and meetings with the full PCAST could be facilitated by having members of the administration and agencies participate in a formal or informal session at each PCAST meeting. In retrospect, some members feel it would have been beneficial to have more frequent sessions with the Office of Management and Budget and the Council of Economic Advisors, either with the full PCAST or with subcommittees conducting a specific study. Joint meetings with groups such as the Defense Science Board could also be productive.

Interactions with the Congress

In that this PCAST also performed the legislated function of the President's Information Technology Advisory Council (PITAC) and of the National Nanotechnology Advisory Panel (NNAP), it prepared reports which were delivered both to the President as well as to the Congress. Generally, however, this PCAST did not have any other formal interface with the Congress. Some members feel that with the increasing role of science and technology in the economy and, thus, in deliberations of the Congress that future PCAST's may choose, at the direction of the President, to play a more active role in advising on the legislative process as it pertains to science and technology matters.

Role of Subcommittees and Technical Advisory Groups

The use of subcommittees chaired or co-chaired by one or two members were used very effectively to carry out studies. These committees would meet more frequently, both face-to-face and virtually and often held meetings before or after the full PCAST meetings in Washington, DC.

The Technical Advisory Groups (TAG) were generally found to provide a valuable source of information, particularly in the development of the nanotechnology and

information technology reports. The number of individuals in a TAG varied from about 40 to over 60; since input from TAG members was via email questionnaire, a large size was not problematic. In the future, the role of the TAGs could be clarified and level of interaction potentially increased, while maintaining a balanced number of participants.

Meeting location, frequency, topics and challenges with open meetings

While meetings of various PCAST Subcommittees occurred at several locations across the country, virtually all of the full public PCAST meetings were held in Washington, DC (except for the 2004 Federal-State workshop in Ohio). This procedure worked well; these DC meetings were combined with individual PCAST member meetings with Federal agencies, members of Congress and additional subcommittee meetings. The PCAST, as a whole, met three or four times each year in Washington, DC, facilitating meetings with the President and additional meetings with administration officials. For subcommittee meetings, changes in venue worked quite well and allowed members to combine meetings with visiting relevant facilities, organizations or to integrate subcommittee meetings with regional or national conferences on related topics.

Being subject to FACA, the Federal Advisory Committee Act, required that our full meetings be open to the public. For public meetings there was always a challenge to balance providing the optimal number of outside briefings and presentations to members, while including sufficient time for discussion and interactions between PCAST members.

A single advisory body versus multiple entities

Almost universally our members found PCAST assuming the role of NNAP and PITAC a good decision. The general principle being that multiple advisory councils on individual topics would probably make it less likely for issues from these multiple councils to be elevated to the President. The breadth of expertise and experience among the existing PCAST was also found to be a strong asset that would be lost in a more narrowly focused Council that still needs to provide advice and recommendations that are appropriate for the President. Where additional technical expertise is required, PCAST considered the use of TAGs to fill that need.

Assessing effectiveness

Feedback was solicited on specific reports developed by PCAST, although a more frequent and organized method may be beneficial. This could include increased discussions with the appropriate department and agency representatives and OSTP to evaluate the impact and utility of PCASTs reports. Briefings and discussions with those agencies that will be most impacted by a report should also occur during the development of the report and after it is finalized. As this PCAST matured, we realized that some of our recommendations, while agreed upon by the administration, required Congressional action. As a result, we would recommend that the next PCAST consider more congressional activity where it is needed for the administration to implement advisory input.

The role for Office of Science and Technology Policy

The Office of Science and Technology Policy (OSTP) serves an essential role in supporting PCAST. The timeliness in appointing the President's Science Advisor (and Director of OSTP) is also vital in initiating the operations of PCAST. OSTP, through the PCAST Executive Director and other OSTP staff, also provides a range of technical, logistical and administrative support for PCASTs studies, reports and meetings. The strength of OSTP support staff was an important ingredient in each of our reports.

RECOMMENDATIONS FOR FURTHER/CONTINUED STUDY

Many of the areas which this PCAST studied and reported upon remain active areas of interest in the economy. As such, the next administration may wish to have updated reports on several of these subjects. However, in the current PCAST, subject material for reports was first gathered by interviews held during the first months of the administration with persons in the White House and then with the Cabinet Secretaries for most of the cabinet positions. From these interviews a list of some twenty different topics were gathered for potential study. In conjunction with White House personnel, this list was used to launch the first reports; reports which would be of most interest to the administration. As time went on, other suggestions were either received from the administration or suggested to the administration as potential report topics. This close tie between the PCAST and the administration resulted in report topics which were, by and large, tied to current topics of administration interest and, as a result, of use and interest to the administration. We would recommend that a similar process be considered by subsequent PCAST committees. It is likely, of course, that the subjects of education excellence, R&D competitiveness, manufacturing capability, energy supply and security, health care and other topics that this PCAST reported upon will continue to be of interest in a new administration. PCAST should be composed of members who are knowledgeable in these areas as well as in the general areas covered by science and technology in today's society.

CONCLUSIONS

The important role played by science and technology in our modern society can not be overemphasized. As a result, the importance of dedicated individuals to provide advice to future administrations will be of growing importance. The members of this PCAST wish each of you well in performing this role and offer to be available during this transition period to assist as you see need in establishing your PCAST.

APPENDIX

Original PCAST Membership:

John H. Marburger, III., Co-Chair
E. Floyd Kvamme, Co-Chair
Charles J. Arntzen

Norman R. Augustine
Carol Bartz
M. Kathleen Behrens
Erich Bloch
Stephen Burke*
G. Wayne Clough
Michael S. Dell
Raul Fernandez
Marye Anne Fox

*Director, Office of Science and Technology Policy
Partner Emeritus, Kleiner Perkins Caufield & Byers
Regent's Professor and Florence Ely Nelson Presidential Chair,
Arizona State University
Former Chairman and CEO, Lockheed Martin Corporation
Executive Chairman of the Board, Autodesk, Inc.
General Partner, RS& Co. Venture Partners IV, L.P.
Director, The Washington Advisory Group
President, Comcast Cable Communications
Secretary, Smithsonian Institution
Chairman of the Board, Dell, Inc.
CEO, ObjectVideo
Chancellor, University of California, San Diego*

Martha Gilliland	<i>Senior Fellow, Council for Aid Education</i>
Ralph Gomory	<i>Former President, Sloan Foundation</i>
Bernadine Healy	<i>Health Editor and Columnist, U.S. News and World Report</i>
Robert J. Herbold	<i>Former Executive Vice President, Microsoft Corporation</i>
Bobbie Kilberg	<i>President, Northern Virginia Technology Council</i>
Walter Massey	<i>President Emeritus, Morehouse College</i>
Gordon E. Moore*	<i>Chairman Emeritus, Intel Corporation</i>
E. Kenneth Nwabueze	<i>CEO, SageMetrics</i>
Steven G. Papermaster	<i>President, Powershift Ventures</i>
Luis M. Proenza	<i>President, University of Akron</i>
George Scalise	<i>President, Semiconductor Industry Association</i>
Charles M. Vest	<i>President, National Academy of Engineering</i>

PCAST Members added in 2005:

F. Duane Ackerman	<i>Former Chairman and CEO, BellSouth Corporation</i>
Paul M. Anderson	<i>Chairman of the Board, Spectra Energy Corporation</i>
Robert A. Brown	<i>President, Boston University</i>
Nance K. Dicciani	<i>Former President and CEO, Honeywell Specialty Materials</i>
Richard Herman	<i>Chancellor, University of Illinois at Urbana-Champaign</i>
Martin C. Jischke	<i>President Emeritus, Purdue University</i>
Fred Kavli	<i>Founder and Chairman, Kavli Foundation</i>
Daniel A. Reed	<i>Director of Scalable and Multicore Computing Strategy, Microsoft Corporation</i>
Hector de Jesus Ruiz*	<i>Chairman and CEO, Advanced Micro Devices, Inc.</i>
Stratton D. Sclavos	<i>Former Chairman of the Board, President, and CEO, VeriSign</i>
John Brooks Slaughter	<i>President and CEO, The National Action Council for Minorities in Engineering</i>
Joseph M. Tucci	<i>Chairman, President, and CEO, EMC Corporation</i>
Robert E. Witt	<i>President, University of Alabama</i>
Tadataka Yamada	<i>President, Global Health Programs, Bill and Melinda Gates Foundation</i>

*Members who rotated off of PCAST.