

EXECUTIVE SUMMARY

SCIENCE
AND
TECHNOLOGY
IN THE
NATIONAL
INTEREST

ENSURING THE BEST PRESIDENTIAL AND FEDERAL ADVISORY
COMMITTEE SCIENCE AND TECHNOLOGY APPOINTMENTS

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING, AND
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

COMMITTEE BIOGRAPHIC INFORMATION

JOHN EDWARD PORTER (Chair) is a partner in the Washington, DC, law firm of Hogan & Hartson. He previously served 21 years as US representative from the 10th district in Illinois. In Congress, he served on the Appropriations Committee, as chair of the Subcommittee on Labor, Health and Human Services, and Education; as vice-chair of the Subcommittee on Foreign Operations; and as vice-chair of the Subcommittee on Military Construction.

MAXINE L. SAVITZ [NAE] (Vice-Chair) is a principal at the Washington Advisory Group. She is the former deputy assistant secretary for conservation, US Department of Energy (DOE). She recently retired from the position of general manager for technology partnerships at Honeywell. Savitz was a member of the National Science Board from 1998 to 2004.

E. EDWARD DAVID [NAE/NAS] is the president of EED, Inc. and consults on R&D and other issues for the Washington Advisory Group. David served as science adviser to President Richard Nixon and director of the Office of Science and Technology Policy from 1970 to 1973. From 1977 to 1986, he was president of Exxon Research and Engineering Company.

FRANK PRESS [NAS] is a principal with the Washington Advisory Group. He was president of the National Academy of Sciences and chairman of the National Research Council from 1981 to 1993 and science adviser to President Jimmy Carter and director of the Office of Science and Technology Policy from 1977 to 1980.

JOHN P. MCTAGUE [NAE] is professor of materials at the University of California, Santa Barbara. McTague was vice president of research and vice president of technical affairs for the Ford Motor Company. He also served as the acting science adviser to President Ronald Reagan and the deputy director and later acting director of the Office of Science and Technology Policy beginning in 1986.

RICHARD A. MESERVE [NAE] is president of the Carnegie Institution. Meserve was chairman of the US Nuclear Regulatory Commission from 1999 to 2003 in the Clinton Administration. Before joining the commission, he was a partner in the Washington, DC, law firm of Covington & Burling and now serves as Senior of Counsel.

ERNEST J. MONIZ is a professor of physics and director of energy studies at the Laboratory for Energy and the Environment at the Massachusetts Institute of Technology (MIT). Moniz served as under secretary of energy from October 1997 to January 2001. He also served from 1995 to 1997 as associate director for science in the Office of Science and Technology Policy in the Clinton administration.

JOHN H. MOXLEY III [IOM] is the managing director of the North American Health Care Division and a partner of the Physician Executive Practice of Korn/Ferry International. He was formerly the assistant secretary of defense for health affairs in the Reagan administration.

ROBERT SERAFIN [NAE] recently retired as director of the National Center for Atmospheric Research (NCAR). Prior to joining NCAR, Serafin was with the Illinois Institute of Technology (IIT) and the IIT Research Institute.

LOUIS W. SULLIVAN [IOM] is founder and president emeritus of the Morehouse School of Medicine in Atlanta. In 1989, he left the school to serve in the cabinet of the George H. W. Bush as secretary of health and human services. Sullivan is chair of the President's Advisory Council on Black Colleges and Universities and cochair of the Presidential Advisory Council on HIV/AIDS.

CHRISTINE TODD WHITMAN served in the cabinet of President George W. Bush as Environmental Protection Agency (EPA) administrator from January 2001 to June 2003. Before working at EPA, she served as the 50th governor of New Jersey, the first woman elected to that state's highest office. She served as governor for 7 years, from 1993 to 2000.

FOR MORE INFORMATION

This report was developed under the aegis of the National Academies Committee on Science, Engineering, and Public Policy (COSEPUP)—the only joint committee of the three honorific academies—the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. Its overall charge is to address cross-cutting issues in science and technology policy that affect the health of the national research enterprise. Maxine Singer, president emerita of the Carnegie Institution of Washington, is the chair of COSEPUP.

More information, including the full body of the report, is available at COSEPUP's Web site—
www.nationalacademies.org/cosepup.

PREFACE

THE nation increasingly relies on the strength and vitality of the science and technology (S&T) enterprise to solve some of today's most intractable problems. Few aspects of modern public policy are untouched by S&T, as we become more dependent on advances in science and engineering to meet such challenges as national defense, chronic disease, economic growth, creating a healthy and affordable food supply, and protecting the environment. Perhaps at no other time in our history has it been so critical to attract scientists and engineers into the highest levels of public service and as members of the almost 1,000 advisory committees convened to provide independent sources of guidance to inform our public policies.

Despite the tremendous opportunities provided by public service, there are administrative and procedural obstacles to recruiting the best and brightest into top S&T posts. With regard to appointing scientists and engineers to federal advisory committees, charges have surfaced recently that the process of making these appointments has become politicized and results in a skewing of the impartial perspective critical to independent advice. It is essential that the government's capacity to consider and incorporate S&T information as part of the basis for public-policy decisions not be compromised by unnecessary obstacles.

This is the third in a series of reports issued by the National Academies on the presidential appointment process, each delivered during a presidential election year with the goal of providing recommendations to the successful candidate about ways to improve the appointments process. The first report was issued in 1992¹. In the 2000 updating², an ad hoc committee of former S&T presidential appointees reviewed and analyzed the data available on S&T presidential appointments and made recommendations for making the process more efficient and increasing the breadth and depth of the pool of candidates willing to accept such appointments. Little progress has been made on the recommendations of the 2000 report, and many of the concerns and recommendations presented then are still relevant today. Although a number of bills in Congress included the reforms suggested, none has been passed (for more details, see Appendix B of the full report). Sufficient changes have occurred since the 2000 report was released to warrant this new edition.

An ad hoc committee of the National Academies Committee on Science, Engineering, and Public Policy (COSEPUP) was charged with preparing this third report examining the most senior S&T appointments to federal government positions and updating the accompanying list of the 50 most urgent S&T presidential appointments. In contrast with the previous reports, this one covers not only presidential appointments to top S&T leadership positions but also the appointment of scientists, engineers, and health professionals to federal advisory committees³ on science-based policy or on the review of research proposals.

The charge to the ad hoc committee was to address the following questions:

1. What measures have been taken in the areas highlighted by the findings and recommendations for S&T presidential appointments in the 1992 and 2000 reports?
 - (a) Initiate early appointments of S&T leadership;
 - (b) Increase the breadth and depth of pool of candidates;
 - (c) Establish a timely approval process.
2. How should the "50 Most Urgent S&T Presidential Appointments" list issued in 2000 be updated?
3. Are there new issues for presidential appointees not addressed in the 2000 report that should be addressed today?
4. What are the roles of federal advisory committees and the range of appointments available? How does the involvement of scientists, engineers and health professionals strengthen science-based policy and federal research programs?
5. What principles govern the selection and appointment of members to advisory committees associated with science-based policy or the review of research proposals? How are principles codified and how do they vary among agencies?
6. What principles should guide the roles of scientists, engineers, and health professionals on federal advisory committees associated with science-based policy or the review of research proposals?
7. What is the depth and breadth of the pool of potential committee members? How could the application and selection processes for different kinds of committees be strengthened to encourage the best-qualified nominees to contribute to the national research enterprise?

¹ Committee on Science, Engineering, and Public Policy. 1992. *Science and Technology Leadership in American Government*. Washington, D.C.: National Academy Press.

² Committee on Science, Engineering, and Public Policy. 2000. *Science and Technology in the National Interest: The Presidential Appointment Process*. Washington, D.C.: National Academy Press.

³ Note that this report considers only federal advisory committees managed by the federal government under FACA. It does not include those managed by the National Academies or the National Academy of Public Administration, although all three types of committees are under FACA.

In responding to its charge, the committee undertook several activities. First, it conducted a literature review on the topic of presidential and federal advisory committee appointments (see Appendix I of the full report). Next, it analyzed the effects of the National Academies report issued in 2000 (see Appendix B of the full report), including its “Top 50” S&T appointments, in light of the nation’s current needs—particularly with relation to national and homeland security.

The committee also reviewed the qualitative and quantitative data available from the Brookings Institution Presidential Appointee Initiative⁴, the General Services Administration (GSA) Federal Advisory Committee Management Secretariat (CMS) Database⁵, and the Government Accountability Office (GAO) reports on federal advisory committees⁶ and conducted interviews with leading scholars and federal agency officials familiar with each initiative.

The committee gathered information via testimony at its July 2004 meeting, in particular from the director of the White House Office of Science and Technology Policy (OSTP), GSA, the Office of Government Ethics (OGE), GAO, and the Brookings Institution Presidential Appointee Initiative. A public comment session was held during the July 2004 meeting, and the committee also heard testimony from Representatives Henry Waxman and Vernon Ehlers and received a written statement from Senator Joseph Lieberman.

Finally, the committee called for comments (Appendix H of the full report) from the scientific, engineering, and health communities in an advertisement in *Science* and sent e-mail messages requesting comments to professional societies and volunteer health organizations that then placed public notices in their newsletters. Requests for comments were also sent to federal agency committee officials and to scientists, engineers, and health professionals who had been members of National Academies committees over the preceding 5 years, on the basis of the assumption that many had been, were, or would be members of federal advisory committees. Over 200 responses to those requests for comments were received.

This report presents the committee’s findings and recommendations on the two major topics addressed in its charge: presidential S&T appointments and appointments of scientists and engineers to federal advisory committees. It is important to recognize that our mandate, and thus the focus of our work, was S&T appointments. We know that appointments to senior positions and to federal advisory committees in other areas of federal responsibility are as important as those in S&T.

The committee identified five aspects in which reforms are needed to enhance the nation’s ability to recruit and attract the best S&T leadership to its highest level of public service: the speed with which appointments are made; continuity; the process by which candidates are nominated, cleared, and confirmed; pregovernment and postgovernment restrictions; and broadening the pool of potential candidates. These recommendations reiterate much of what was recommended in the National Academies 2000 report. Key changes include the earlier identification and appointment of the Assistant to the President for Science and Technology (APST)—separate from the appointment of the White House OSTP director. In addition, the list of the top appointments has undergone considerable revision by separating the positions into two categories—those in which S&T expertise is essential and those in which S&T expertise is useful. The committee is also emphasizing the need for presidential administrations to seek advice from the S&T community when recruiting candidates for S&T appointments. The committee explored three ways in which reform or illumination could improve the federal advisory committee process: adhering to an appropriate set of criteria for selecting committee members, making more explicit and public the appointment process itself, and ensuring that the federal administrative units responsible for committee appointments are sufficiently staffed, trained, and expert in the process. All those are now recommendations.

The need to ensure that sound S&T form the basis of many of the nation’s critical decisions now and in the future has never been greater. The committee believes that the recommendations made in this report will help any administration to meet that need.

John Edward Porter, Chair

⁴ <http://www.appointee.brookings.org/>

⁵ <http://www.fido.gov/facadatabase/>

⁶ In particular, Government Accountability Office. 2004. Federal Advisory Committees: Additional Guidance Could Help Agencies Better Ensure Independence and Balance.

EXECUTIVE SUMMARY

THE security, economic well-being, and safety and health of the United States depend on the strength and vitality of the nation's science and technology (S&T) enterprise. Almost every aspect of modern public policy is touched by S&T, including those involving national security, economic development, health care, the environment, education, energy, and natural resources. The US research enterprise is the largest in the world and leads in innovation in many fields. For these reasons, it is critical to attract scientists and engineers into the highest levels of public service, either as political appointees in top leadership positions or as members of the many advisory committees providing scientific and technical advice to executive agencies.

In 2004, an ad hoc committee of the National Academies Committee on Science, Engineering, and Public Policy was charged with preparing this third report examining the most senior S&T appointments to federal government positions and updating the accompanying list of the most urgent S&T presidential appointments. Sufficient changes have occurred since the National Academies 2000 report on presidential appointments—including the 2001 terrorist attacks, the anthrax deaths, the reorganization of homeland-security activities in the federal government, new developments in S&T, and concerns about the politicization of S&T decision making and advice—to warrant this new edition. In contrast with previous reports on the subject, this one covers not only presidential appointments to top S&T leadership positions but also the appointment of scientists, engineers, and health professionals to serve on federal advisory committees that focus on science-based policy or on the review of research proposals. The committee recognizes that other areas of federal responsibility are as important as S&T, but S&T appointments are the only ones within its purview. This summary presents the committee's recommendations on the two major topics in its charge: presidential S&T appointments and appointments of scientists and engineers to federal advisory committees.

PRESIDENTIAL SCIENCE AND TECHNOLOGY APPOINTMENTS

1. Shortly after the election, the President or President-elect should identify a candidate for the position of Assistant to the President for Science and Technology (APST) to provide advice, including suggesting and recruiting other science and technology presidential appointees. After inauguration, the President should promptly both appoint this person as APST and indicate the intent to nominate him or her as the director of the White House Office of Science and Technology Policy (OSTP).

Selection of a confidential adviser on S&T immediately after the election, if one is not already in place, is essential to ensure that assistance is available to the incoming president in identifying the best candidates for key S&T appointments and to provide advice in the event of a crisis. That person should be named the Assistant to the President for Science and Technology (APST) immediately after the inauguration so that he or she will have the stature that the S&T portfolio warrants.

Ideally, the APST will have credibility and the respect of the S&T community; an understanding of large research and educational enterprises; background as a practicing researcher (academic or nonacademic); awareness of a wide variety of public-policy issues; familiarity with issues in technology and national security, economic development, health and the environment, and international affairs; and the ability to work and communicate with others, including policy makers.

Because the APST does not require Senate confirmation, the nominee should be appointed immediately after the presidential inauguration. However, because the APST cannot undertake the duties of OSTP director without Senate confirmation, the president should seek his or her rapid confirmation to facilitate a continuous connection between the two roles.

2. The President and the Senate should streamline and accelerate the appointment process for S&T personnel—indeed, all key personnel—to reduce the personal and financial burdens on nominees and to allow important positions to be filled promptly.

Because of the critical need for input by high-level S&T leadership in program implementation and current policy debates, it is imperative that key positions not sit vacant for long periods. In addition to identifying candidates early in a new administration or replacements in an existing one, efforts must be made to streamline and accelerate the appointment process.

Streamlining could involve such mechanisms as relying on one system of background checks rather than separate systems for the White House and the Senate, clarifying the criteria for the position in question and the principles for questioning nominees, requesting only relevant and important background information, and keeping the process timely and on track with the goal of completing the appointment process within 4 months from first White House contact to Senate confirmation.

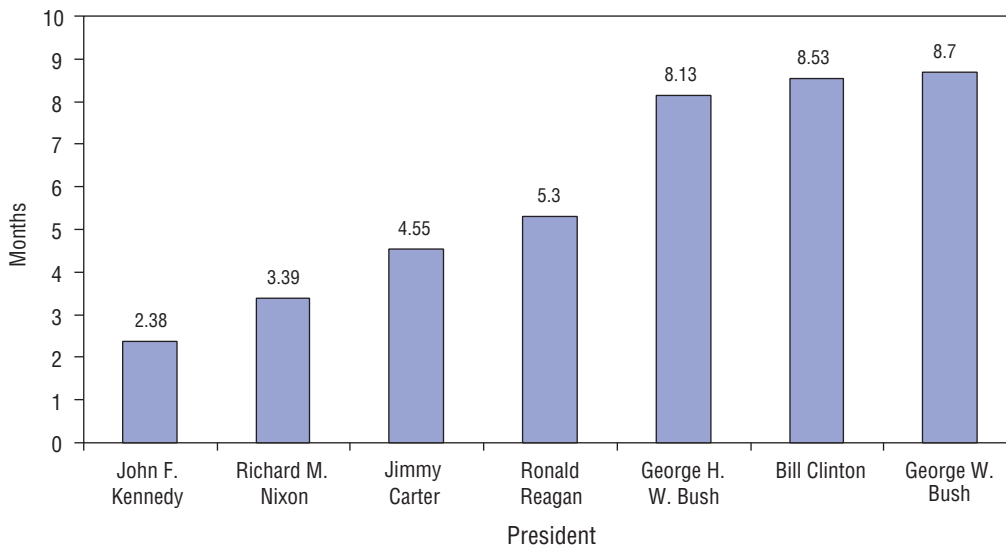
3. Congress and the Office of Government Ethics should consolidate and simplify appointment policies and procedures to reduce the financial and vocational obstacles to government service.

Some mechanisms for consolidating and simplifying the process are standardizing and clarifying pre-employment requirements and postemployment restrictions, reducing unreasonable financial and professional losses for those who serve by simplifying financial-disclosure reporting requirements (for example, evaluating a de minimis rule), eliminating many of the restrictions associated with the use of blind trusts, and ensuring continuing health insurance and pension plan coverage.

4. The APST and other senior administration leadership should actively seek input from accomplished and recognized S&T leaders and from a broad and diverse set of constituencies when seeking candidates for S&T appointments.

As a means of seeking this input and to build a strong pool of candidates with policy experience now and in the future, accomplished and recognized S&T leaders and professional science, engineering, and health societies should propose emerging leaders in their fields to serve in government positions and should expand junior and senior internship and fellowship programs that provide their members with government and policy experience. Continuing efforts should be made to identify women and members of under-represented groups for such positions.

FIGURE 1: NUMBER OF MONTHS TO FILL THE TOP 500 JOBS IN THE ADMINISTRATION



SOURCE: The Brookings Institution. Presidential Appointee Initiative. 2000. Staffing a New Administration: A Guide to Personnel Appointments in a Presidential Transition. This analysis, originally conducted by Calvin McKenzie, has been updated with estimated data for the George W. Bush administration from Paul Light, the Director of the Presidential Appointee Initiative.

NOTE: The averages presented here are estimates for initial appointments during the presidencies' first years based on information available at the time they were calculated. Actual averages for some administrations may be higher when data for candidates during the entire term are included. The committee has analyzed the data on the pool of key S&T candidates listed in Table 1 of the full report and there is no substantial difference in time needed for confirmation of these candidates between the first Clinton administration and the George W. Bush administration. Note also that the time from inauguration to confirmation is actually a conservative estimate inasmuch as several positions are still vacant after the president's first year in office. Even more important from the standpoint of a prospective appointee is the time from first White House contact to appointment.

TOP SCIENCE AND TECHNOLOGY LEADERSHIP POSITIONS

The following are lists of what the committee considers to be the most critical federal science and technology (S&T) appointments. The positions listed below include both presidential and nonpresidential appointments (but not career appointments) that the committee believes are important for the development of S&T-based policy. The list is divided into two parts. In the first are the key positions for which S&T background is essential. In the second are S&T policy-related positions that are not traditionally held by a scientist, engineer, or health professional but for which an understanding of S&T is important in a broader context of policy development. These positions may sometimes be held by persons with a science or engineering background. Major presidentially appointed commissions and boards whose province is S&T or S&T-related policy are included on both lists (for example, the President's Council of Advisors on Science and Technology, the National Science Board, and the Nuclear Regulatory Commission).

In general, those listed are presidential appointees (PA) or presidential appointees with senate confirmation (PAS). However, a nonpresidential appointment is listed if there is no one higher in the chain of command that can be expected to have a scientific or technical background and it is not a career appointment. For example, the director of basic energy sciences in the Department of Energy, who manages a billion-dollar program, is not listed because the director of the Office of Science is a presidential appointee higher in the line of command. However, this guideline will not be followed in exceptional cases, such as director of the Defense Advanced Research Projects Agency, who reports to the director of defense research and engineering but also historically has a crucial role in innovative technology development. Also not listed are important career appointments such as the director of the National Institute of Allergy and Infectious Diseases, the science and technology advisor to the secretary of state, the deputy director for science and technology at the Central Intelligence Agency, and the director of research and development at Department of Homeland Security. These people are appointed by the relevant secretary or director, not the president.

Both lists focus on positions relevant to the physical, biomedical, and environmental sciences. Positions traditionally held by social and behavioral scientists, including economists, are not included, because the number of these positions in the federal government is large and they are rarely viewed as involving input from a science adviser to the President.

Furthermore, each relevant cabinet agency is represented to identify the key S&T official or adviser in each agency.

Lists of this type inevitably involve judgment and are not unique. They do, however, represent the positions that the committee believes are most critical to S&T or in which S&T are critical factors in policy making. The goals of the lists are to provide guidance to those involved in the appointment process about the most critical positions from the perspective of the S&T community, to encourage timely appointment to the positions, and to suggest policy positions beyond those traditionally filled with scientists and engineers for which such appointments may be considered.

In each table, the following appointment categories are used:

PAS = presidential appointment with Senate confirmation

PA = presidential appointment (without Senate confirmation)

NA = noncareer appointment

Defined by Office of Personnel Management as "appointment authority allocated on individual case basis by OPM; authority reverts to OPM when the noncareer appointee leaves the position.

Appointments may be made only to General positions and cannot exceed 25 percent of the agency's Senior Executive Service (SES) position allocation."

(Source: Office of Personnel Management Web site: <http://www.opm.gov/ses/glossary.asp>)

FT = fixed term appointment, with length of appointment indicated

KEY SCIENCE AND TECHNOLOGY POSITIONS

EXECUTIVE OFFICE OF THE PRESIDENT

Assistant to the President for Science and Technology ^a	(PA)
Director, Office of Science and Technology Policy ^a	(PAS)
Associate Directors, Office of Science and Technology Policy (4)	(PAS)
President's Council of Advisors on Science and Technology (PCAST) ^b	(PA)

DEPARTMENT OF AGRICULTURE

Under Secretary for Research, Education, and Economics	(PAS)
Under Secretary for Food Safety	(PAS)

DEPARTMENT OF COMMERCE

Under Secretary for Oceans and Atmosphere/Director, National Oceanic and Atmospheric Administration (NOAA)	(PAS)
Director, National Institute of Standards and Technology (NIST)	(PAS)

DEPARTMENT OF DEFENSE

Director, Defense Research and Engineering	(PAS)
Director, Defense Advanced Research Projects Agency (DARPA)	(NA)
Director, Operational Test and Evaluation, Office of the Secretary of Defense	(PAS)
Assistant Secretary of Defense for Health Affairs	(PAS)

DEPARTMENT OF ENERGY

Director, Office of Science	(PAS)
Director, Office of Nuclear Energy, Science, and Technology	(NA)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Assistant Secretary for Health, Office of Public Health and Science ^c	(PAS)
Director, National Institutes of Health	(PAS)
Director, National Cancer Institute ^d	(PA)
Director, Centers for Disease Control and Prevention	(NA)

DEPARTMENT OF HOMELAND SECURITY

Under Secretary for Science and Technology	(PAS)
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DEPARTMENT OF THE INTERIOR

Director, US Geological Survey	(PAS)
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DEPARTMENT OF TRANSPORTATION

Administrator, Research and Special Programs Administration	(PAS)
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DEPARTMENT OF VETERANS AFFAIRS

Under Secretary for Health	(PAS) [FT = 4 years]
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ENVIRONMENTAL PROTECTION AGENCY

Assistant Administrator for Research and Development	(PAS)
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NATIONAL SCIENCE FOUNDATION

Director	(PAS) [FT = 6 years]
Deputy Director	(PAS)
National Science Board (24) ^b	(PAS) [FT = 6 years]

KEY SCIENCE AND TECHNOLOGY POLICY-RELATED POSITIONS

EXECUTIVE OFFICE OF THE PRESIDENT

Associate Director, Natural Resources,
Energy, and Science, Office of Management
and Budget (NA)
Deputy Assistant to the President for Health
Policy, Office of the President (PA)
Chairman, Council on Environmental Quality (PAS)

DEPARTMENT OF AGRICULTURE

Under Secretary for Natural Resources and
Environment (PAS)

DEPARTMENT OF COMMERCE

Under Secretary for Technology (PAS)

DEPARTMENT OF DEFENSE

Under Secretary for Acquisition, Technology,
and Logistics (PAS)
Assistant to the Secretary for Nuclear and
Chemical and Biological Defense Programs (PAS)
Assistant Secretary for Network and Information
Integration, and Chief Information Officer (PAS)

DEPARTMENT OF ENERGY

Under Secretary for Energy, Science, and
Environment (PAS)
Under Secretary for Nuclear Security/
National Nuclear Security Administrator (PAS)
Assistant Secretary for Energy Efficiency and
Renewable Energy (PAS)
Assistant Secretary for Fossil Energy (PAS)
Deputy Administrator for Defense Programs (PAS)
Assistant Secretary for Environment, Safety,
and Health (PAS)
Assistant Secretary for Environmental
Management (PAS)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Commissioner, Food and Drug Administration (PAS)
Surgeon General^c (PAS)
[FT = 4 years]
Assistant Secretary for Planning and Evaluation (PAS)

DEPARTMENT OF HOMELAND SECURITY

Under Secretary for Information Analysis and
Infrastructure Protection (PAS)

DEPARTMENT OF THE INTERIOR

Assistant Secretary for Water and Science (PAS)
Director, US Fish and Wildlife Service (PAS)

DEPARTMENT OF LABOR

Assistant Secretary for Occupational
Safety and Health (PAS)

DEPARTMENT OF STATE

Assistant Secretary for Oceans and International
Environment and Scientific Affairs (PAS)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Administrator (PAS)

ENVIRONMENTAL PROTECTION AGENCY

Administrator (PAS)

NUCLEAR REGULATORY COMMISSION

Chairman (PAS)
[FT = 5 years]
Commissioners (4) (PAS)
[FT = 5 years]

^a Many administrations, the same person has held the posts of assistant to the president for science and technology and the director of the White House Office of Science and Technology Policy (OSTP). There have been instances in which presidential administrations have not named an assistant to the president for science and technology.

^bThese positions are part-time.

^cIn recent administrations, the same person has held the posts of assistant secretary for public health and science and surgeon general, but this has not always been the case.

^dThe director of NCI is listed as opposed to the other NIH institute directors because the position is the only one that is filled by presidential appointment. The others are career appointees.

SCIENCE AND TECHNOLOGY APPOINTMENTS TO FEDERAL ADVISORY COMMITTEES

5. When a federal advisory committee requires scientific or technical proficiency, persons nominated to provide that expertise should be selected on the basis of their scientific and technical knowledge and credentials and their professional and personal integrity. It is inappropriate to ask them to provide nonrelevant information, such as voting record, political-party affiliation, or position on particular policies.

S&T issues frequently pose ethical and societal questions that may require regulation or policy solutions, and many critical policy choices in national security, the environment, the economy, agriculture, energy, and health depend on a deep understanding of S&T. Many factors—including societal values, economic costs, and political judgments—come together with technical judgments in the process of reaching advisory committee recommendations. Essential viewpoints needed for appropriate committee balance and scope should be represented by accomplished people in that policy arena, but scientists, engineers, and health professionals nominated primarily to provide S&T input should be selected for their scientific and technological knowledge and credentials and for their professional and personal integrity.

Achieving a balance of policy perspectives may be appropriate for those placed on committees for their policy insights, but it is not a relevant criterion for selecting members whose purpose is to provide scientific and technical expertise. Therefore, it is no more appropriate to ask S&T experts to provide nonrelevant information—such as voting record, political-party affiliation, or position on particular policies—than to ask them other personal and immaterial information, such as hair color or height. This type of information has no relevance

in discussions related to S&T. Furthermore, even for committee members selected for reasons unrelated to expertise, political-party affiliation and voting record do not necessarily predict their position on particular policies and should not be used as a means to balance committee perspectives.

Finally, most people are likely to form opinions on S&T issues with which they are experienced and familiar. For that reason, excluding S&T experts from serving on advisory committees solely on the grounds that their opinions are known is inappropriate and could leave the federal advisory committee system devoid of qualified candidates. The government would be better served by a policy in which the best scientists, engineers, and health professionals are selected because of their expertise with their opinions disclosed to staff and other committee members in closed session than by a policy that excludes them because of their presumed opinions on S&T issues.

Disclosing perspectives, relevant experiences, and possible biases serves two important purposes: it provides a context in which committees can assess and consider the views of individual committee members, and it provides an opportunity to balance strong opinions or perspectives through the appointment of additional committee members.

The National Academies uses such a policy: people asked to serve on committees are obliged to reveal any possible sources of bias that they have so that others on the committee can discount or ignore their advice on a given subject. That approach promotes the inclusion of people who potentially can make important contributions to the work at hand. It does not, however, prevent or guard against appointing people who have conflicts of interest—a separate but equally important concern.

TABLE 1: TYPES OF SCIENTIFIC AND TECHNICAL FEDERAL ADVISORY COMMITTEES, BY ORIGIN AND PURPOSE

PURPOSE	ORIGIN			
	President	Secretary/Independent Agency Administrator	Congress	Agency Executive
Science for policy	DHHS President’s Council on Bioethics	DOE Secretary of Energy Advisory Board	EPA Clean Air Act Advisory Committee	CDC/HRSA Advisory Committee on HIV and STD Prevention and Treatment
Policy for science	OSTP President’s Council of Advisers on Science and Technology	DOD Defense Science Board	DHS Science and Technical Advisory Committee	NOAA Science Advisory Board
Program evaluation and direction	DOD President’s Information Technology Advisory Committee	DOE High-Energy Physics Advisory Panel	NRC Advisory Committee on Reactor Safeguards	DOI Earth Observing System Land Processes Distributed Active Archive Center Science Advisory Panel
Proposal review	Architectural and Transportation Barriers Compliance Board’s Accessibility Guidelines for Outdoors Developed Areas Negotiated Rulemaking Advisory Committee	NSF Advisory Panel for Integrative Activities	USDA Collaborative Forest Restoration Program Advisory Panel	NIH Genes, Genomes and Genetic Sciences Integrated Review Group
Event-driven	Presidential Commission on Space Shuttle Challenger Accident	Columbia Accident Investigation Board	National Commission on Terrorist Attacks Upon the United States (9/11 Commission)	DOI Exxon Valdez Oil Spill Public Advisory Committee

NOTE:

CDC = Centers for Disease Control and Prevention
 DHHS = United States Department of Health and Human Services
 DHS = Department of Homeland Security
 DOD = US Department of Defense

DOE = US Department of Energy
 DOI = US Department of the Interior
 EPA = Environmental Protection Agency
 HRSA = Health Resources and Services Administration
 NIH = National Institutes of Health (NIH)

NOAA = National Oceanic and Atmospheric Administration
 NRC = Nuclear Regulatory Commission
 NSF = National Science Foundation
 OSTP = Office of Science and Technology Policy
 USDA = United States Department of Agriculture

6. Presidential administrations should make the process for nominating and appointing people to advisory committees more explicit and visible and should examine current federal advisory committee appointment categories to see whether they are sufficient to meet the nation's needs.

Administration officials should broadly announce the intent to create an advisory committee or appoint new members to an existing committee and should provide an opportunity for relevant and interested parties to suggest nominees they believe would be good committee members.

A model for this process is that used by the Environmental Protection Agency Science Advisory Board, which provides information on its Web site on the method and selection criteria related to its advisory committees and *Federal Register* notices requesting nominations for a particular committee and later describing how a particular committee was formed. It also posts biographic and some general financial information (such as sources of research support) on a committee's membership before the committee's initial meeting and provides timely announcements of the committee's meeting agenda and followup on a short-term basis with the minutes of committee meetings' open sessions (although the latter are required by the Federal Advisory Committee Act [FACA], timeliness is not enforced). Procedural mechanisms of this type should be in place for all federal advisory committees.

Efforts are also needed to clarify and identify the conflict-of-interest principles that will be applied to committee membership. As a first step toward public disclosure, the General Service Administration should post on its Web site and elsewhere the appointment status of appointees—that is, whether a committee member is to be classified as a special government employee, a regular government employee, a consultant, or a representative since there can be great variance in conflict-of-interest procedures.

As a second step, the appointment classification should be re-examined to determine whether it meets the needs of federal agencies' activities. Of particular concern is the classification of committee members who review research proposals or provide direction on federal research programs. Care needs to be taken to ensure that conflict-of-interest requirements for such federal advisory committees are not so burdensome that the best scientists, engineers, and health professionals are unwilling to serve on them.

7. To build confidence in the advisory committee system and increase the willingness of scientists and engineers to serve, department and agency heads should establish an appointment process supported by explicit policies and procedures and hold staff accountable for its implementation.

Staff who process advisory committee membership nominations and who manage advisory committee operations should be properly trained senior employees familiar with the importance and nuances of the advisory committee process, including a clear understanding of the appropriateness of the questions that candidates should and should not be asked.

CONCLUSION

The nation is in need of exceptionally able scientists, engineers, and health professionals to serve in executive positions in the federal government and on federal advisory committees. Such persons, when serving as presidential appointees, make key programmatic and policy decisions that will affect our lives and those of our children. Similarly, skilled scientists and engineers are needed for advisory committees to provide advice on the myriad issues with complex technologic dimensions that confront government decision makers. Our nation has long been served by its ability to draw qualified S&T candidates to government service because of the opportunities for intellectually challenging work that affects the world in which we live and that encourages and protects the scientific process. We must continue to enlist the best candidates for these important positions and ensure that the obstacles to their service are minimized.

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