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The President's Office of Science and Technology Policy: Issues for Congress

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The President's Office of Science and Technology Policy: Issues for Congress

Summary

Congress established the Office of Science and Technology Policy (OSTP) through the National Science and Technology Policy, Organization, and Priorities Act of 1976 (P.L. 94-282). The act states that "The primary function of the OSTP Director is to provide, within the Executive Office of the President [EOP], advice on the scientific, engineering, and technological aspects of issues that require attention at the highest level of Government." Further, "The Office shall serve as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government."

The OSTP Director also manages the National Science and Technology Council (NSTC), established by Executive Order 12881, which coordinates science and technology (S&T) policy across the federal government, establishes national goals for federal S&T investments, and prepares coordinated research and development (R&D) strategies. In addition, the OSTP Director co-chairs the President's Council of Advisors on Science and Technology (PCAST), established by Executive Order 13226. The OSTP Director also plays a role in the communication of scientific and technical information by federal agency scientists and engineers.

An issue for Congress is what should be the appropriate title, rank, role, and responsibilities of OSTP's Director. Some in the science and technology (S&T) community contend that by providing the OSTP Director with cabinet rank, or the title of Assistant to the President, the individual in that office would have more influence within the EOP. Others have proposed that several individuals take on the roles and responsibilities of the OSTP Director rather than one individual, and that the OSTP Director play a greater role in ensuring federal agency scientists and engineers are able to communicate their findings. Further, some in the S&T community also believe that the OSTP Director and NSTC should play a greater role in federal agency coordination, priority-setting, and budget allocation. Another question is who should decide the issue focus of OSTP Associate Directors, NSTC interagency coordination activities, and PCAST.

Congress may consider several legislative options regarding OSTP. First, it may wish to allow the President to have autonomy over OSTP. Currently, the President maintains discretion over the policies, structure, and personnel of OSTP, NSTC, and PCAST, often through executive orders. Second, Congress may wish to evaluate whether or not OSTP is still needed within the EOP. If so, Congress can continue its current OSTP legislative guidance mechanisms, or it can increase the intensity with which it applies those mechanisms. Congress annually evaluates OSTP through the regular authorization and appropriations process, and introduces issue-specific bills that identify actions and issues on which Members of Congress believe OSTP should focus. An alternative is for Congress to increase the intensity of its evaluation by holding oversight hearings on OSTP, or by amending OSTP's authorization statute. When Congress evaluates the various policy options, a factor to consider is that the OSTP Director's influence in the EOP may depend more on the relationship between whomever is appointed to that position and the President than legislative action.

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The President's Office of Science and Technology Policy: Issues for Congress

Congress established the Office of Science and Technology Policy (OSTP), including the position of its Director, within the Executive Office of the President (EOP) through the National Science and Technology Policy, Organization, and Priorities Act of 1976 (P.L. 94-282). The act states that "The Office shall serve as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government."

In addition, the act establishes the position of the OSTP director. According to the act, "The primary function of the OSTP Director is to provide, within the Executive Office of the President, advice on the scientific, engineering, and technological aspects of issues that require attention at the highest level of Government." The OSTP Director also manages the National Science and Technology Council (NSTC), established by Executive Order 12881,[1] which coordinates science and technology (S&T) policy across the federal government, establishes national goals for federal S&T investments, and prepares coordinated research and development (R&D) strategies. In addition, the OSTP Director co-chairs the President's Council of Advisors on Science and Technology (PCAST), established by Executive Order 13226.[2] (See **Figure 1**.)

The role and influence of OSTP, NSTC, PCAST, and its predecessor organizations have varied among Administrations, depending both on the President and the individual serving as OSTP Director.[3] Unlike the heads of some other EOP agencies, the OSTP Director testifies before congressional committees, even though the office provides advice and assistance to the White House.[4]

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[1] Executive Order 12881, "Establishment of the National Science and Technology Council," 58 *Federal Register* 226, November 23, 1993, pp. 62491 at [http://www.archives.gov/federal-register/executive-orders/pdf/12881.pdf]. Note that the National Archives website at [http://www.archives.gov/federal-register/executive-orders/disposition.html] provides the disposition of all executive orders.

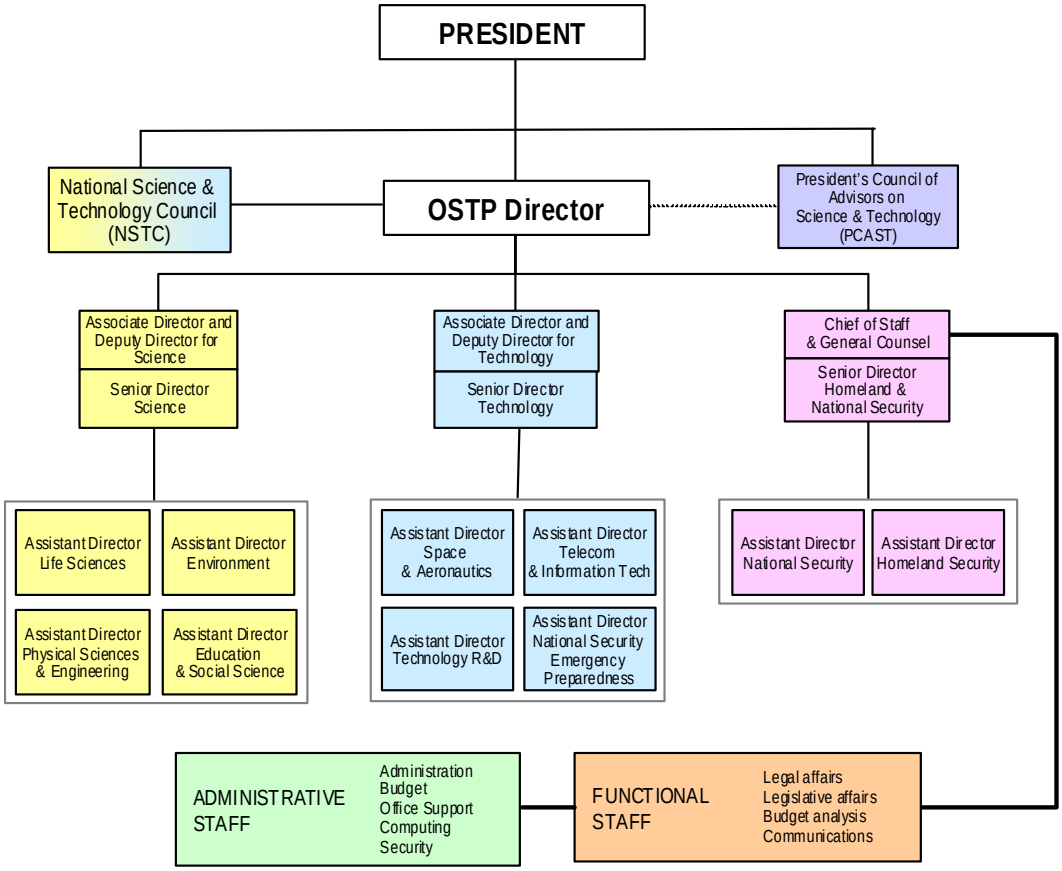
[2] Executive Order 13226, "President's Council of Advisors on Science and Technology," 66 *Federal Register* 192, October 3, 2001, pp. 50523-52524 at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr03oc01-141.pdf].

[3] For a discussion of the degree to which Science Advisers have been influential, listen to National Public Radio, *The Evolving Role of the Presidential Science Advisor*, Talk of the Nation, November 16, 2007, at [http://www.npr.org/templates/story/story.php?storyId=16343713].

[4] For more information, see CRS Report 98-606, *The Executive Office of the President: An*

(continued...)

Figure 1. Office of Science and Technology Policy (OSTP) Organization



Source: Office of Science and Technology Policy, website, accessed October 30, 2008 at [http://www.ostp.gov/galleries/default-file/OSTP%20org%20charts%2010-15-08.pdf].

This report will provide an overview of the history of science and technology advice to the President, and provide an overview and discuss issues and options for Congress regarding OSTP's Director, OSTP management and operations, PCAST, and NSTC.

History

Science and technology policy issues tend to reach the Presidential level if they involve multiple agencies; have budgetary, economic, national security, or foreign policy dimensions; or are highly visible to the public. In recent years, ethical issues, such as federal funding of stem cell research, have also reached this level of attention.

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[4] (...continued)
Historical Overview, by Harold C. Relyea; and CRS Report RL31351, *Presidential Advisers' Testimony Before Congressional Committees: An Overview*, by Harold C. Relyea and Todd B. Tatelman.

Throughout U.S. history, Presidents have obtained S&T advice through federal scientists and engineers, or informal personal contacts.[5] Since the early 1930s, Presidents have attempted to expand their sources of science and technology advice through a series of advisory boards and committees. These boards and committees tend to remain for discrete periods of time before being disbanded, often by the next President. When again faced with the need for S&T advice, new advisory boards or committees, sometimes reconstituted from previously disbanded ones, would be formed.

During the period between World War I and through World War II, the role of the application of research to provide technology for both military and economic purposes became evident. As a result, President Franklin D. Roosevelt established the Office of Scientific Research and Development (OSRD) in 1941. Following World War II, the utility of science and technology to society as exhibited during the War was crystallized in *Science, the Endless Frontier*, a 1945 report by Vannevar Bush, OSRD director. This report, which proposed a "program for postwar scientific research," set the stage for today's view of the relationship between the federal government and the S&T community regarding policy for science. In his report, Bush indicated that scientific progress was essential for the war against disease, for national security, and for the public welfare.

As shown in the **Appendix Table**, the next several Presidents used a variety of mechanisms to obtain S&T advice within the EOP, to enhance interagency coordination, and to receive counsel from outside advisors. Organizations within the EOP included the Office of the Special Assistant to the President for Science and Technology (Eisenhower), and Office of Science and Technology (OST; Kennedy, Johnson). Examples of organizations focused on interagency coordination included the President's Scientific Research Board (Truman), and the Federal Council for Science and Technology (Eisenhower, Kennedy, Johnson). Examples of external advisory committees are the Science Advisory Committee (Truman, Eisenhower), and the President's Science Advisory Committee (PSAC; Eisenhower, Kennedy, Johnson).

During the Nixon Administration, the S&T policy office in the White House, OST, was abolished, and relocated within NSF. In addition, President Nixon decided to not appoint new members to PSAC after its members resigned. President Ford supported the return of a science advisory mechanism to the White House, but he wished to establish it through legislation, not executive order.[6] He signed the National Science and Technology Policy, Organization, and Priorities Act of 1976

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[5] For an overview of science and technology policy, see CRS Report RL34454, *Science and Technology Policymaking: A Primer*, by Deborah D. Stine. For a history of OSTP, see Genevieve J. Knezo, "Science and Technology," Chapter 6 in Harold C. Relyea (ed.), *The Executive Office of the President: A Historical, Biographical, and Bibliographical Guide* (Westport, Connecticut: Greenwood Press, 1997).

[6] Jeffrey K. Stine, *A History of Science Policy in the United States, 1940-1985*, Report for the House Committee on Science and Technology Task Force on Science Policy, 99th Cong., 2nd sess., Committee Print (Washington, DC: GPO, 1986), available at [http://ia341018.us.archive.org/2/items/historyofscience00unit/historyofscience00unit.pdf].

(P.L. 94-282) into law on May 11, 1976. This act established the position of OSTP and OSTP Director.

The **Appendix Table** provides a historical compilation of Presidential S&T policy advisers with their titles, EOP S&T agencies, interagency coordination organizations, and advisory committees.[7] As illustrated in the Table, the Presidents that followed President Ford continued to adapt OSTP and its related organizations to suit their needs. For example, the act included provisions for the OSTP Director to chair an Intergovernmental Science, Engineering, and Technology Advisory Panel (ISETAP). The ISETAP has since been subsumed by a cabinet-level council within the executive branch, NSTC, which is officially chaired by the President and managed by the OSTP Director. In addition, P.L. 94-282 also established a President's Committee on Science and Technology (PCST) with the OSTP Director as a member. The PCST was subsumed by PCAST with the OSTP Director as a co-chair.[8]

Overview

The OSTP summarizes its major objectives as follows:

- Advise the President and others within the Executive Office of the President on the impacts of science and technology on domestic and international affairs;[9]
- Lead an interagency effort to develop and implement sound science and technology policies and budgets;
- Work with the private sector to ensure Federal investments in science and technology contribute to economic prosperity, environmental quality, and national security;
- Build strong partnerships among federal, state, and local governments, other countries, and the scientific community; and
- Evaluate the scale, quality, and effectiveness of the Federal effort in science and technology.[10]

The following sections provide an overview of the responsibilities and roles of the OSTP Director, NSTC, and PCAST. Information is also provided on OSTP's budget and staffing.

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[7] More S&T policy history is available in CRS Report RL34454, *Science and Technology Policymaking: A Primer*, by Deborah D. Stine.

[8] PCAST was established by Executive Order 13226, "President's Council of Advisors on Science and Technology," 66 *Federal Register* 192, October 3, 2001, pp. 50523-52524 at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr03oc01-141.pdf].

[9] For more information on this topic, see CRS Report RL34503, *Science, Technology, and American Diplomacy: Background and Issues for Congress*, by Deborah D. Stine.

[10] OSTP, "What We Do," webpage at [http://www.ostp.gov/html/_whatwedo.html].

Role of OSTP Director

The OSTP Director serves as a two-way communication conduit between the EOP and the federal and non-federal S&T community. Some OSTP Directors have focused on their role of communicating the views of the S&T community to the EOP. Others have focused on communicating the views of the EOP to the S&T community.

P.L. 94-282 authorizes the position of OSTP Director and places that individual at Level II on the executive pay scale. The OSTP Director is not a member of the Cabinet. The OSTP Director and up to four Associate Directors are appointed by the President and confirmed by the Senate.[11] The OSTP Director also holds the traditional title of Science Adviser to the President. Presidents have sometimes granted the science adviser the additional title of Assistant to the President for Science and Technology (APST) or Special Assistant to the President.

These titles may influence the degree of access the science adviser has to the President and EOP decisionmaking. (See **Appendix Table** for a historical overview of science advisers and their titles.) Although each President differs in how he has managed EOP staff, generally a presumption of access to the President is accorded to Cabinet members and assistants to the President.[12] Those who hold other titles, such as the Director of an EOP office or a special assistant to the President, are presumed to have less access.

Presidential Appointment Status and Congress. The relationship between Congress and the OSTP Director and APST varies depending on the nature of the appointment. If an individual serves only as APST, then no Senate confirmation is required. However, Congress does confirm the individual the President nominates to be OSTP Director. While the OSTP Director can be required to testify before Congress, APSTs may decline requests that they testify, indicating that, as an assistant to the President, they would not testify due to separation of powers and/or executive privilege.[13] Some Members of Congress may believe it is important to have oversight over whom is appointed as the president's science adviser, and to have an option of hearing testimony from the individual serving in that role. Others may believe that the role of OSTP Director or APST is sufficiently minor that they feel no need to have oversight over that position, and that they have other sources from which they may obtain S&T information.

Roles and Responsibilities. Historically, the OSTP Director advises the President on policy formulation; presidential appointments; S&T-related budget

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[11] The number of Associate Directors has varied. Throughout the Bush Administration, there were two Associate Directors: one focused on science and the other on technology.

[12] Information on the President's cabinet is available at [http://www.whitehouse.gov/government/cabinet.html].

[13] For a fuller discussion of this issue, see CRS Report RL31351, *Presidential Advisers' Testimony Before Congressional Committees: An Overview*, by Harold C. Relyea and Todd B. Tatelman.

issues, including research and development (R&D) and science, technology, engineering, and mathematics (STEM) education; and the policy significance of scientific and technical developments.[14] As OSTP Director and NSTC manager, this individual can provide federal agency coordination, information, and guidance when special events occur, such as national emergencies, disasters, or S&T-related international negotiations. As co-chair of PCAST, the OSTP Director can gather and identify the consensus of the S&T community on issues of interest to the Administration.

Under Executive Order 12472, the OSTP Director performs some special roles regarding National Security Emergency Preparedness communications.[15] First, the OSTP Director is designated to exercise most of the President's wartime communications powers under Section 706 of the Communications Act (47 U.S.C. 151 et seq.).[16] As a result, to perform these special Presidentially-delegated functions, a Presidentially-appointed Senate-confirmed appointee should be in charge of OSTP at all times.[17] Second, under Executive Order 12472, the OSTP Director also exercises several non-wartime emergency telecommunications functions, and leads the interagency Joint Telecommunications Resources Board (JTRB). The JTRB provides a forum for top-level discussions of emergency communications issues during times of crisis. In the wake of the September 11, 2001, terrorist attacks, OSTP Director John Marburger designated one civil service staff member to provide continuity on these issues across Presidential Administrations.[18]

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[14] Based on Carnegie Commission on Science, Technology, and Government, *Science & Technology and the President* (New York: Carnegie Corporation of New York, October 1988); National Academies, *Science and Technology Advice in the White House: Recommendations for President-Elect George Bush* (Washington, DC: National Academy Press, 1988); and National Academies, Committee on Science, Engineering, and Public Policy, *Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in the New Administration* (Washington, DC: National Academy Press, 2008) at [http://www.nap.edu/catalog.php?record_id=12481].

[15] Executive Order 12472, "Assignment of National Security and Emergency Preparedness Telecommunications Functions," April 3, 1984, at [http://www.ncs.gov/library/policy_docs/eo_12472.html].

[16] Under the Communications Act, commercial telecommunications companies can be directed to perform specific functions on behalf of the government, such as providing priority services.

[17] There is an exception that occurs when an official is serving as the Acting Director through a Presidentially-approved succession order.

[18] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, November 6, 2008.

Relationship with Other Agencies. The OSTP Director does not have direct authority over federal agencies or the Office of Management and Budget (OMB). Rather, the OSTP Director uses his or her role as a "bully pulpit" to encourage federal agencies, universities, nongovernmental organizations, and others in the S&T community to take or stop taking actions that the Administration supports or opposes. **Box 1** provides an overview of the OSTP Director's role in the budget process and that individual's interaction with OMB.

National Science and Technology Council

On November 23, 1993, the National Science and Technology Council (NSTC) was established by Executive Order 12881 to coordinate science and technology policy across the federal government.[19] According to the executive order, NSTC is to coordinate the S&T policy-making process; ensure science and technology policy decisions and programs are consistent with the President's stated goals; help integrate the President's S&T policy agenda across the federal government; ensure S&T is considered in the development and implementation of federal policies and programs; and further international S&T cooperation.

In contrast to its predecessor, the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), which was chaired by the OSTP Director, the NSTC is chaired by the President. Many of the NSTC members are cabinet officials. In practice, the NSTC has rarely had a meeting with the President or cabinet-level officials present. Rather, OSTP staff and detailees[20] manage NSTC activities in conjunction with federal agency staff.

Currently, the NSTC has four primary committees: Science; Technology; Environment and Natural Resources; and Homeland and National Security. As shown in **Figure 2,** each NSTC committee has subcommittees, interagency working groups, or taskforces focused on specialized topics. The membership of these committees and subcommittees are generally not cabinet officials, but instead lower ranking staff.

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[19] Executive Order 12881, "Establishment of the National Science and Technology Council," 58 *Federal Register* 226, November 23, 1993, pp. 62491 at [http://www.archives.gov/federal-register/executive-orders/pdf/12881.pdf]. The executive order also states that NSTC oversees the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), the National Space Council, and the National Critical Materials Council, none of which have been active since the NSTC was created.

[20] A detail is an officially approved temporary assignment of a civil service employee (called informally a "detailee") to a different position in another federal agency. The employee's official title, series, grade, rate of compensation, or permanent employer does not change.

Box 1. OSTP Participation in the Federal Budget Process

In 2008 congressional testimony, Bush Administration OSTP Director John H. Marburger III described how OSTP participates in the federal budget process. The budget process involves four basic steps: (1) overall priority setting by OSTP and OMB, (2) agency preparation of budget proposal to OMB, (3) agency negotiations with OMB, and (4) final budget decision by the President and OMB Director.

A key activity in the first step is OSTP's request to federal agencies for their recommendations on R&D priorities. In addition, interagency working groups meet to determine which agencies will be responsible for certain activities where multiple agencies may be responsible for a given issue area. This information is used as the basis for an OSTP and OMB joint memorandum that described the Administration's R&D priorities and R&D investment criteria. Agencies are to use this memorandum as an aid in their preparation of the President's budget.

The Bush Administration also had fundamental principles that it followed in deciding whether or not to fund programs. For example, the Administration believed that the federal government should fund basic research, while applied research and development may be more appropriately funded by industry. These principles influenced what programs the Administration was willing to fund. (For a discussion of this issue, see CRS Report RL33528, *Industrial Competitiveness and Technological Advancement: Debate Over Government Policy*, by Wendy H. Schacht.)

During the second step, agencies prepare their budgets. The OSTP did not review agency budgets before they were sent to OMB but did continually interact with the agencies, providing advice and working with them on their priorities. During the Bush Administration, OSTP gave less attention to the National Institutes of Health and the Department of Energy, as it viewed this research as being totally within an agency's purview. OSTP Director Marburger stated that more guidance was given to other agencies that have larger science budgets and to programs that cross agency boundaries. Once completed, federal agencies then submit their proposed budgets to OMB.

In the third step, OMB worked with OSTP to review the proposed budgets to see if they reflected previously agreed upon plans and priorities. The OSTP also participated in OMB budget examiner presentations to the OMB Director and provided advice on priorities at that time.

OSTP Director Marburger stated that the strongest feedback on Administration priorities occurs during budget preparation (step 2); however, the most direct feedback occurred when agencies are negotiating with OMB (step 3). These negotiations included the funding levels and the programs on which that funding was spent.

In the fourth step, OSTP's primary role in the budget process was to advise on the quality of the proposals and their relevance to the priorities that had been established. The ultimate choices, however, were made by the President, the OMB Director, and the Cabinet, according to Dr. Marburger.

Source: Transcript of U.S. House of Representatives, Committee on Appropriations, Subcommittee on Commerce, Justice, Science and Related Agencies, "Office of Science and Technology Policy," hearing, February 26, 2008.
Note: The annual OSTP/OMB R&D priorities memorandum is available at [http://www.ostp.gov/cs/rd_budgets].

Congress has mandated the existence of some subcommittees. The President has chosen, in some cases, to use NSTC subcommittees to meet Congressional mandates for councils and other advisory bodies. For example, the America COMPETES Act (P.L. 110-69) directs the establishment of a President's Council on Innovation and Competitiveness. The act states that the council is to include the Secretary or head of a number of federal agencies, OSTP, and OMB. The chair of the council is to be the Secretary of Commerce. However, rather than establishing the council, the President established an NSTC Committee on Technology subcommittee.[21] The subcommittee has met several times to respond to the act.[22]

President's Council of Advisors on Science and Technology

OSTP's external advisory committee is called the President's Council of Advisors on Science and Technology (PCAST) established through Executive Order 13226.[23] The PCAST was originally established by President George H. W. Bush, and was reestablished in the Clinton and George W. Bush Administrations. The executive order indicates that PCAST provides a mechanism for the President "to receive advice from the private sector and academic community on technology, scientific research priorities, and math and science education."[24] On occasion, PCAST also meets with the President to discuss science and technology policy issues. Several presidential level advisory committees established in previous Administrations have been subsumed under PCAST.[25]

PCAST's members are high-level executives from industry, education and research institutions, and other nongovernmental organizations. PCAST conducts workshops and sometimes uses technical advisory groups to gather information for reports to the President on topics such as federal-state cooperation, energy, U.S. competitiveness, nanotechnology, and information technology.

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[21] White House, "Memorandum for the Director of the Office of Science and Technology Policy," April 10, 2008, at [http://www.whitehouse.gov/news/releases/2008/04/20080410-5.html].

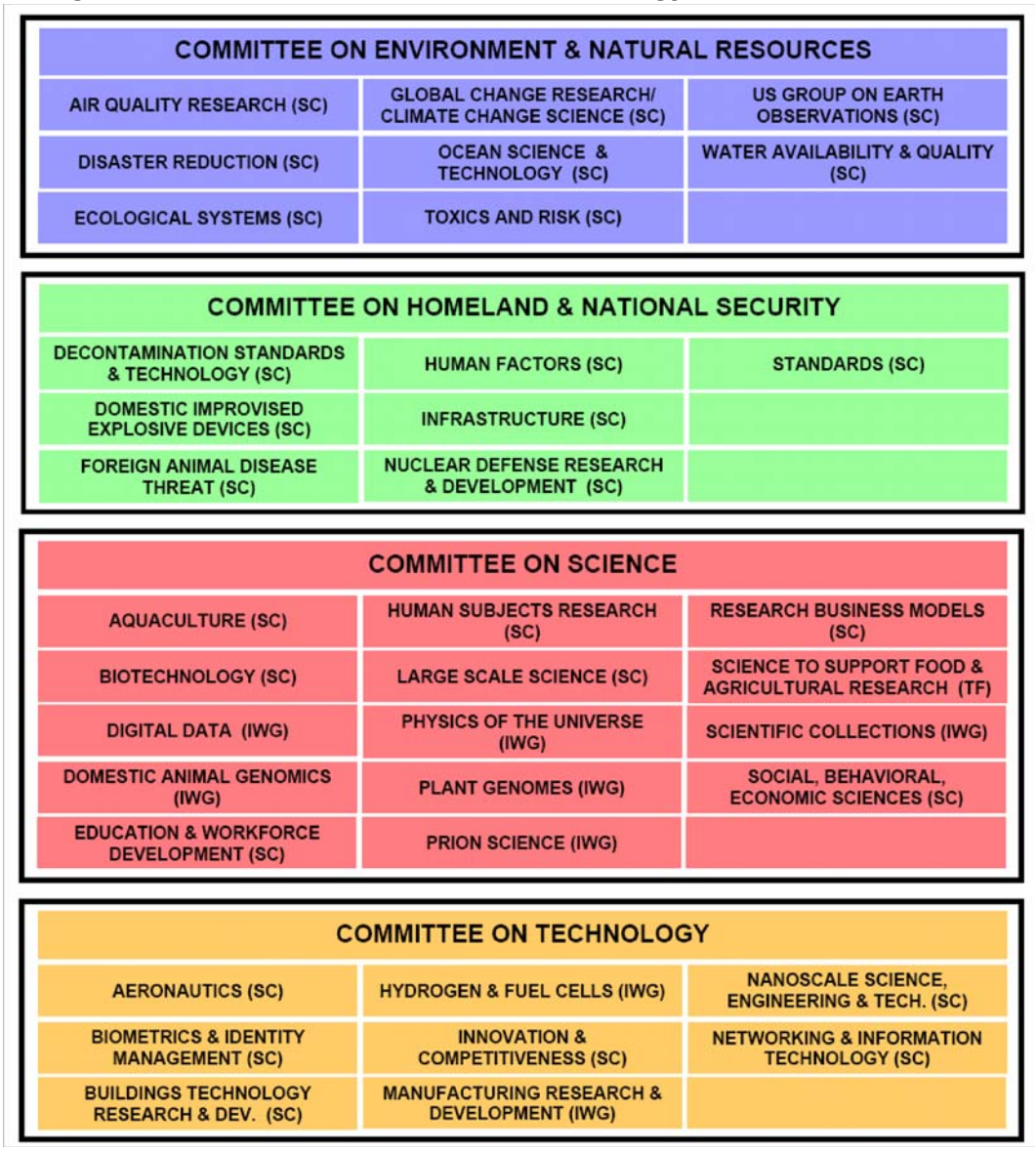
[22] E-mail communication between the COT and CRS, September 15, 2008.

[23] Executive Order 13226, "President's Council of Advisors on Science and Technology," 66 *Federal Register* 192, October 3, 2001, pp. 50523-52524 at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr03oc01-141.pdf].

[24] For more information on PCAST, see [http://www.ostp.gov/PCAST/pcast.html].

[25] For example, Executive Order 13385 assigned the role and responsibilities of he President's Information Technology Advisory Committee (PITAC) to PCAST. Executive Order 13385, "Continuance of Certain Federal Advisory Committees and Amendments to and Revocation of Other Executive Orders," 70 *Federal Register* 57989-57991, October 4, 2005 at [http://edocket.access.gpo.gov/2005/pdf/05-19993.pdf].

Figure 2. National Science and Technology Council Committees



Source: National Science and Technology Council, website, accessed October 22, 2008 at [http://www.ostp.gov/cs/nstc/committees].
Note: SC = subcommittee; IWG = interagency working group; TF = task force.

OSTP Budget and Staffing

The degree to which OSTP can provide advice to the President and respond to congressional action is related to its budget and staffing. **Figure 3** provides OSTP's budget and **Figure 4** provides OSTP's staffing level from FY1977 until FY2008. The OSTP's FY2008 budget is $5 million. Congress appropriated an additional $2.2

million for FY2008 to support OSTP's Federally Funded Research and Development Center (FFRDC),[26] the Science and Technology Policy Institute (STPI).[27]

As illustrated in **Figure 3** and **Figure 4**, OSTP funding and staffing levels have varied among Presidential Administrations. After its initial startup in the Ford Administration, OSTP funding peaked during the G.H.W. Bush Administration, and was at its lowest during the Reagan Administration. The OSTP's staffing was at its peak during the Clinton Administration and at its lowest in the Reagan Administration. Some are concerned that this uneven funding and staffing situation leads to inconsistent provision of S&T advice within the EOP.

Although the White House has allocated OSTP 40 full-time equivalent staff members, it does not fund staffing at that level. As of Fall 2008, OSTP had a total of 65 staff members, detailees, and fellows.[28] According to OSTP, this total includes 12 political staff, 19 non-political staff, and 34 detailees and fellows.[29] The political and non-political staff are funded by OSTP, the detailees are funded by their agencies, and the fellows by a variety of organizations.

As illustrated in **Figure 5**, both the Clinton and the Bush Administrations relied on detailees and fellows to conduct OSTP's activities. The detailees and fellows are not included in OSTP's budget request to Congress each year, so information regarding their number is irregular in its availability. The available data, however, illustrate that OSTP has increasingly relied on detailees and fellows. For example, in FY1992, the number of detailees and fellows was 11.[30] Toward the end of the Clinton Administration (FY2000), there were 61 detailees and fellows; since 2001, approximately 30-40 detailees per year have provided about one-half of OSTP's staffing needs.

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[26] For more on FFRDCs, see CRS Report RL34454, *Science and Technology Policymaking: A Primer*, by Deborah D. Stine.

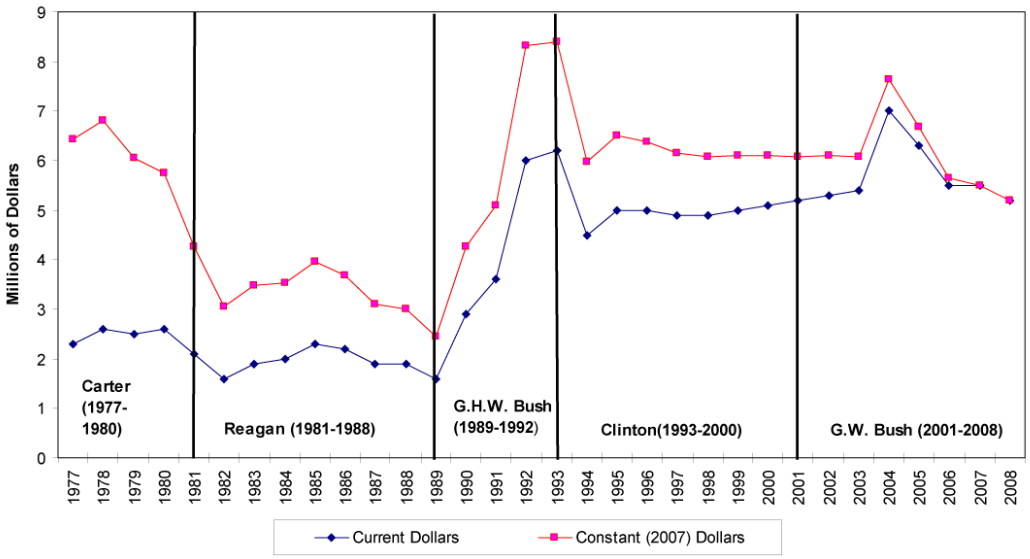
[27] In 1991, as part of P.L.105-207, Congress established the Science and Technology Policy Institute (STPI). More information on STPI is available at [http://www.rand.org/scitech/stpi/about.html] and [http://www.ida.org/stpi/pages/about.html].

[28] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 20, 2008.

[29] Fellows are scientists and engineers who come to Washington to gain experience in public policy. Most are recent graduates of doctoral programs, but some are more experienced staff from industry or universities. Fellows generally come for a year, but that time can be extended.

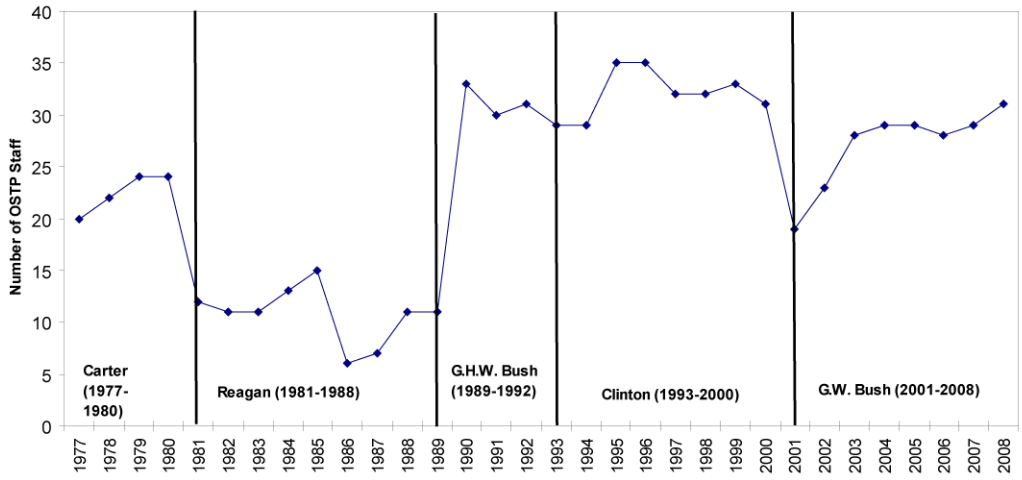
[30] U.S. Congress, House Committee on Appropriations, Subcommittee on Departments of Veterans Affairs and Housing and Urban Development, and Independent Agency Approprations for 1995, *National Science Foundation and Office of Science and Technology Policy*, hearing, 103rd Cong., 2nd sess., 1994.

Figure 3. OSTP Funding, FY1977-FY2008



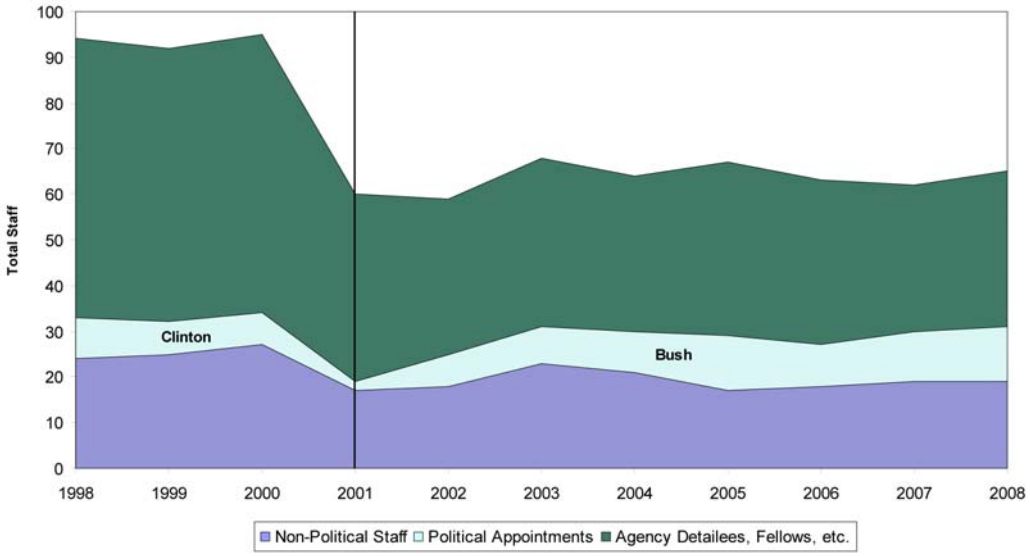
Source: Congressional Research Service. Data is from Appropriation Acts and Committee Reports, FY1977-FY2008.
Note: Due to lack of comparability, data from FY1976 and the Transition Quarter (TQ) that took place from July 1, 1976 through September 30, 1976 is not included. Funding for OSTP's FFRDC, STPI, is also not included.

Figure 4. OSTP Staffing Level, FY1977-FY2008



Source: Congressional Research Service. Data is from U.S. Office of Management and Budget, *Budget of the United States Government*, Appendix, FY1979-FY2009. (Note that actual staffing numbers are provided two years later. For example, to determine actual staffing in FY2007, one must review the FY2009 budget request.). The OMB did not provide this data for FY2001, and information is not yet available for FY2008. For these two fiscal years, CRS provides an estimate based on information provided by OSTP. (E-mail communication between CRS and OSTP on August 18, 2008).
Note: The number of OSTP staff includes only political and non-political staff. It does not include detailees or fellows. For this information, see **Figure 5**.

Figure 5. OSTP Political and Non-Political Staff, Detailees, and Fellows, FY1998-FY2008



Source: Congressional Research Service based on data provided by OSTP (E-mail communication between CRS and OSTP on August 18, 2008).

According to information provided by OSTP, two long-term and five short-term staff whose primary focus is policy will be available during the presidential transition.[31] Some federal agency detailees have policy appointments, and these staff may stay during the transition at the discretion of their home agency and the new Administration.

Issues for Congress

Congress faces several issues regarding oversight and implementation of OSTP. These include the title, rank, roles, and responsibilities of the OSTP Director; the number and issue focus of OSTP Associate Directors; and the sufficiency of OSTP budget and staffing. A related issue is the participation of OSTP and NSTC in federal agency coordination, priority-setting, and budget allocation. Other issues are what role OSTP should play in the communication of scientific and technical information by federal agency scientists and engineers, and the appropriate stature and influence of PCAST. Each of these issues will be discussed in more depth below.

[31] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 20, 2008.

Title, Rank, Roles, and Responsibilities of OSTP Director

Some in the science and technology community have proposed that the OSTP Director have the title of APST or hold cabinet rank.[32] A related issue is whether or not the roles and responsibilities of the OSTP Director should be undertaken by several appointees rather than one.

Title and Rank. As shown in the **Appendix Table**, presidential science advisers have held a variety of titles since the F.D. Roosevelt Administration. Of the 12 Administrations reviewed, the most common title has been some variation of Science Adviser to the President (five Administrations), followed by Special Assistant to the President (four Administrations). The OSTP Director held the title of APST in the George H.W. Bush and Clinton Administrations but not in the George W. Bush Administration.

Congress may be interested in two policy issues related to additional EOP titles held by the OSTP Director. First, as discussed earlier, while the OSTP Director can be required to testify before Congress, APSTs may decline requests that they testify, indicating that, as an assistant to the President, they would not testify due to separation of powers and/or executive privilege. Congress asks the OSTP Director to testify on science and technology policy related issues on a regular basis. For example, in the 110th Congress, the OSTP Director testified on a wide variety of topics, including climate change research including concerns about political interference with this research; information technology R&D program oversight; windstorm impact reduction; women in academic science and engineering; coal gasification; international science and technology cooperation; patents developed with federal research dollars; weather satellites; competitiveness and basic research; and the R&D budget. Congress may wish to ensure the availability of the OSTP Director to testify on issues of congressional interest.

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[32] See for example, Carnegie Commission on Science, Technology, and Government, *Science & Technology and the President* (New York: Carnegie Corporation of New York, October 1988) at [http://www.carnegie.org/sub/pubs/science_tech/nextadm.htm]; Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf]; Ensuring the Best Presidential Appointments in the New Administration, Committee on Science, Engineering, and Public Policy, *Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in the New Administration* (Washington, DC: National Academy Press, 2008) at [http://www.nap.edu/catalog.php?record_id=12481]; Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf]; and Center for the Study of the Presidency, Study Group on Presidential Science and Technology Personnel Advisory Assets, "*Presidential Leadership to Ensure Science and Technology in Service of National Needs: A Report to the 2008 Candidates*" at [http://www.thepresidency.org/pubs/science_tech_2008.pdf].

Some in the science and technology community also contend that if the OSTP Director had cabinet rank, that individual would have more access to the President and other senior Administration staff.[33] They believe that cabinet rank status would enhance the director's authority and influence the degree to which a scientific and technical viewpoint is incorporated into Administration decisionmaking. Some Members of Congress may believe that incorporating this viewpoint and authority into an Administration is important, while others may believe this status may influence the ability of the science adviser to represent an independent perspective or overemphasizes the importance of incorporating S&T advice into presidential-level deliberations.

The Bush Administration OSTP Director and the longest serving science adviser, Dr. John H. Marburger III, questioned whether or not he would have had more influence with the APST title. He stated that holding an additional title is a trivial issue and maintains he and OSTP staff had at least the same degree of access as others in previous Administrations.[34] Further discussions with OSTP staff indicate that OSTP Director Marburger attended the same senior staff meetings, including Cabinet meetings, as his predecessors with "Assistant to the President" titles. The APST title was not granted to Dr. Marburger, they said, because, as OSTP Director, Dr. Marburger could have been required to testify before Congress. OSTP staff indicated that the Administration was concerned that confusion might arise if Congress could require some Administration staff with "Assistant to the President" titles to testify, but not others.[35]

Some in the S&T community contend that the individual serving as APST should be able to discriminate between privileged advice to the President that should not be disclosed to Congress and information appropriate for Congress to know.[36] They also state their belief that in order to be influential, the APST or OSTP Director should be a cabinet-level position and identified at the same time as cabinet members, shortly after the election of a new Administration. As APST, the individual could begin work immediately; however, undertaking the duties of OSTP

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[33] National Academies, Committee on Science, Engineering, and Public Policy, *Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in a New Administration* (Washington, DC: National Academy Press, 2008) at [http://www.nap.edu/catalog.php?record_id=12481].

[34] Dan Greenberg, "Part Two: Q&A With John H. Marburger," *Chronicle of Higher Education*, blog, April 29, 2008, at [http://chronicle.com/review/brainstorm/greenberg/part-two-a-talk-with-president-bushs-science-adviser].

[35] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 14, 2008. Some in the S&T policy community have also expressed concerns regarding the movement of OSTP offices out of the Old Executive Office Building. OSTP staff indicate that their movement out of the Old Executive Office Building was required due to the need to structurally reinforce the building. Plans call for them to return to that building once this work is completed.

[36] See, for example, Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf].

Director would require formal nomination and Senate confirmation.[37] If identified early, some in the S&T community contend, the APST could provide the President with advice during important early stages of the Administration. In addition, the APST could identify and recruit the best scientists, engineers, and health professionals for the approximately 100 S&T policy-related presidential appointments.[38]

From a historical perspective, some experts believe that the relationship between the President and the science adviser is so unique and idiosyncratic that no assumptions can be made regarding the influence of that individual on presidential decision-making.[39] Another perspective is that the S&T adviser's status and access is based on how the White House is organized.[40] According to this perspective, if the President relies for advice primarily on a group of White House staff members, the adviser should be the APST. If the cabinet is the primary adviser, than the adviser should be made a member of the Cabinet without portfolio. Based on this perspective, the title itself is less important than the access to the President that it signals. Other critics contend that rather than focusing on the title, the S&T community should instead focus on the degree to which the Presidential Administration will be transparent about its operations.[41]

Roles and Responsibilities. The OSTP Director has a number of roles and responsibilities. First, the OSTP Director is to cover two broad policy areas — science and technology — and also the issue areas where science and technology might influence decisionmaking on key policies such as national security, environment, and energy policy. Today, this can include almost every public policy issue. Second, the OSTP Director is to provide advice to the President and key Administration officials including working with OMB on the R&D budget. Third, the OSTP Director is to manage the NSTC and co-chair PCAST. Fourth, the OSTP Director coordinates communication activities during disasters, and represents the United States at international S&T policy-related meetings.

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[37] National Academies, Committee on Science, Engineering, and Public Policy, *Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in a New Administration* (Washington, DC: National Academy Press, 2008) at [http://www.nap.edu/catalog.php?record_id=12481].

[38] For a list of the 50-60 S&T policy appointments deemed most urgent by the National Academies, see National Academies, Committee on Science, Engineering, and Public Policy, *Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in a New Administration* (Washington, DC: National Academy Press, 2008) at [http://www.nap.edu/catalog.php?record_id=12481].

[39] Roger Pielke, Jr., "Who has the ear of the President?," *Nature* 450:347-348, November 15, 2007 at [http://www.nature.com/nature/journal/v450/n7168/full/450347a.html].

[40] National Academies, *Science and Technology Advice in the White House: Recommendations for President-Elect George Bush* (Washington, DC: National Academy Press, 1988)

[41] For a discussion of this issue, see David Goldston, "US election: Not the best advice." *Nature*, 455:453, September 24, 2008, at [http://www.nature.com/news/2008/080924/full/455453a.html].

One option might be to separate these roles into multiple positions, and have several appointees undertake them. For example, one appointee could cover science and another technology. One might focus on providing advice to the President and PCAST and another on coordinating NSTC interagency activities and S&T advice for agencies who lack the needed expertise.

The S&T community has debated, for example, the option of having two different individuals serve as APST and OSTP Director. While some believe having two people serve in these roles might enhance the ability and potential of an APST to be part of the President's inner circle, others believe the potential for conflict between the two is high.[42] Some of these same arguments have been made regarding the option of having one appointee focus on science, and another on technology. In this case, the concerns expressed by some in the technology community are about the potential conflict that might occur between a presidential appointee focused on technology, and the OSTP Director.[43]

Another challenge in implementing this option is that OSTP's budget and staff are limited. Two senior officials with their associated staff may be more than can be supported given these limitations. Possible Congressional options are to request the President to appoint an APST, potentially early in the Administration, designate the OSTP Director as having cabinet rank status, or enhance the OSTP Director's EOP designation within the EOP so that they have more political stature and authority.

Number and Issue Focus of OSTP Associate Directors

OSTP Associate Directors are Senate-confirmed presidential appointees who focus on specific areas of science and technology policy. According to the act that established OSTP (P.L. 94-282), OSTP can have no more than four Associate Directors. During the Clinton Administration, four Associate Directors focused on the following issues: science; technology; environment; and national security and international affairs. The Bush Administration reduced the number of OSTP Associate Directors to two — one focused on science and the other on technology — and added the title of Deputy Director for each.[44] As a historical illustration, the Carter Administration had three Associate Directors focused on the issue areas of National Security, International and Space Affairs; Human Resources and Social and Economic Services; and Natural Resources and Commercial Services.[45]

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[42] National Academies, Committee on Science, Engineering, and Public Policy, *Science and Technology in the National Interest: Ensuring the Best Presidential and Federal Advisory Committee Science and Technology Appointments* (Washington, DC: National Academy Press, 2005) at [http://www.nap.edu/catalog.php?record_id=11152].

[43] David Hatch, "Tech Czar Might Rule Policy Under Obama," *Congressional Daily*, September 10, 2008, at [http://www.nationaljournal.com/congressdaily/cda_20080910_6421.php?related=true&story1=cda_20080910_6421&story2=cd_20080912_9947&story3=null].

[44] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 14, 2008.

[45] General Accounting Office, *The Office of Science and Technology Policy: Adaptation to*
(continued...)

Some Members of Congress have expressed an interest in specifying the issue focus of OSTP Associate Directors or the Assistant Directors who report to them. For example, in its report (S.Rept. 110-124) on the Departments of Commerce and Justice, Science, and Related Agencies Appropriations Bill, 2008 (S. 1745), the Senate Committee on Appropriations recommended OSTP create an Associate Director for Earth Science and Application position to coordinate all federal efforts to better understand and predict changes in the earth's climate and oceans.[46] The National Nanotechnology Initiative (NNI) Amendments Act of 2008 (H.R.5940; S. 3274) would require the OSTP Director to designate an Associate Director as the Coordinator for Societal Dimensions with the responsibility for the oversight, planning, and budget for the environmental, health, and safety; and, the ethical, legal and societal impact components of the NNI.[47] Two bills (H.R.6104, S.3047) would assign an assistant director the duty of managing a committee focused on science, technology, engineering, and mathematics (STEM) education.

OSTP staff indicate that only two OSTP Associate Directors were appointed because Dr. Marburger believed that four Associate Directors were unnecessary to manage a maximum of 40 staff.[48] Some in the science and technology community, however, have expressed concerns that an insufficient number of Associate Directors and a lack of specific issue responsibility leads to a lack of White House leadership on key issues where a coordinated effort is needed.[49] They recommend that OSTP be required to have four Associate Directors and that their issue areas be specified.

Some in the science and technology community also propose that some of the OSTP Associate Director positions could be shared appointments with the National Economic Council (NEC), National Security Council (NSC), Homeland Security Council (HSC), Domestic Policy Council (DPC), and Office of Management and

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[45] (...continued)
a President's Operating Style May Conflict with Congressionally Mandated Assignments, PAD-80-79, September 3, 1980, at [http://archive.gao.gov/f0102/113202.pdf].

[46] CRS Report RL34092, *Commerce, Justice, Science, and Related Agencies: FY2008 Appropriations*, coordinated by William J. Krouse, Edward Vincent Murphy, and M. Angeles Villarreal.

[47] CRS Report RL34614, *Nanotechnology and Environmental, Health, and Safety: Issues for Consideration*, by John F. Sargent.

[48] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 14, 2008.

[49] Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf]; Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf]; and Center for the Study of the Presidency, Study Group on Presidential Science and Technology Personnel Advisory Assets, "*Presidential Leadership to Ensure Science and Technology in Service of National Needs: A Report to the 2008 Candidates,*" Summer 2008 at [http://www.thepresidency.org/pubs/science_tech_2008.pdf].

Budget (OMB). Shared appointments have, on occasion, occurred during the Bush Administration.[50]

Sufficiency of OSTP Budget and Staffing

The ability of OSTP to undertake the actions requested of it depends on both its budget and staff. **Figure 3** and **Figure 4**, presented earlier, provide OSTP's historical budget and staffing.

Some reports developed by the S&T community express their concern that OSTP needs to have more civil service professional staff and a higher budget.[51] Such staff, they say, would maintain institutional knowledge and have a solid understanding of the government operations. As a result, these staff members could enhance support to political appointees. These reports assert that this change would make OSTP staff similar to other EOP expert staff, such as those employed at OMB.[52] Additional funding, these reports state, would provide OSTP with sufficient staff and the ability to conduct special analyses on emerging issues.

Bush Administration OSTP staff contended that sufficient long-term scientific and technical staff to respond to the President's scientific and technical information and analysis needs was available at OSTP and at federal agencies. They believed, for example, that OSTP staff was sufficient even when staffing is generally at its lowest point during Presidential transitions.[53]

Should Congress wish to enhance the funding and staffing of OSTP, it can do so through the appropriations process. Congress provided $5.2 million for OSTP in FY2008, less than the President's request of $5.5 million.[54] For FY2009, the President's budget requests $5.3 million for OSTP.[55] Congress may wish to maintain the current situation, or it might wish to increase the number of OSTP civil service

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[50] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 20, 2008. For example, Richard Russell, Associate Director for Technology, OSTP, in the Bush Administration, shared an appointment with the NEC.

[51] Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf]; and Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf].

[52] According to the FY2009 budget request, OMB's budget is $78 million which supports 489 staff members. For more information, see [http://www.whitehouse.gov/omb/budget/fy2009/pdf/appendix/eop.pdf].

[53] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 20, 2008.

[54] CRS Report RL34540, *Commerce, Justice, Science and Related Agencies: FY2009 Appropriations*, coordinated by William J. Krouse and Edward Vincent Murphy.

[55] Ibid.

staff; specify the number of Associate Directors; designate the policy issue focus of the Associate Directors; or require that OSTP play a greater role in the activities of other EOP agencies, such as the Office of Management and Budget (OMB), National Economic Council (NEC), Council on Environmental Quality (CEQ), Domestic Policy Council (DPC), Homeland Security Council (HSC), and National Security Council (NSC).

Should Congress wish to increase the number of OSTP civil service staff while maintaining OSTP's current budget, it might wish to examine the utility of OSTP's FFRDC, the Science and Technology Policy Institute. In FY2008, Congress appropriated $2.2 million for STPI — almost half the funding for the remainder of OSTP's activities.[56] Therefore, OSTP's FY2008 budget would be over $7 million if the two funds were combined. On the other hand, OSTP may need the short-term analysis of scientific and technical information STPI provides.

OSTP and NSTC Participation in Federal Agency Coordination, Priority-Setting, and Budget Allocation

As discussed earlier, OSTP, the OSTP Director and Associate Directors, and the NSTC are involved in coordination, priority-setting, and budget allocation for federal S&T activities. Members of Congress and S&T policy organizations have suggested that this involvement be enhanced. This section describes those perspectives.

110th Congress Activities. During the 110th Congress, a number of Members of Congress expressed an interest in enhancing the role OSTP, the OSTP Director, and NSTC play in federal agency coordination, priority-setting, and budget allocation. For example, the America COMPETES Act (P.L. 110-69)[57] states the President, acting through OSTP, shall convene a National Science and Technology Summit to examine the health and direction of the U.S. science, technology, engineering, and mathematics enterprises.[58] The act then directs OSTP to submit, as part of the annual budget submission, a description of how the Administration's R&D budget priorities relate to the conclusions and recommendations of the summit.

Some bills introduced during the 110th Congress would direct the OSTP Director, or an Associate Director designated by the director, to convene interagency committees or other activities to enhance coordination, priority-setting, or budget

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[56] For FY2008, funding for STPI was not requested as part of OSTP's budget request, but that of the National Science Foundation (NSF). Congress directed that NSF transfer STPI funding to OSTP.

[57] For more information, see CRS Report RL34396, *The America COMPETES Act and the FY2009 Budget*, and CRS Report RL34328, *America COMPETES Act: Programs, Funding, and Selected Issues*, both by Deborah D. Stine.

[58] The summit was held on August 18-19, 2008. For more information, see [http://www.ornl.gov/sci/natlscitechsummit/]. According to OSTP staff, the report based on the summit will be released in Fall 2008.

allocation. Examples include activities in nanotechnology (H.R. 5940, S. 3274),[59] climate change (H.R. 906, S. 2307, S. 280), the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program (H.R. 5819),[60] gender equity in academic science and engineering (H.R. 6314, H.R. 6263), measurement standards for sequestered carbon (S. 280), and regional infrastructure cost assessments of the impacts of climate change (H.R. 620, H.R. 4226, S. 280).

Other bills introduced during the 110th Congress specify the involvement of NSTC. Examples include bills focused on hurricane research (H.R. 2407, H.R. 1832, S. 931), ocean acidification (H.R. 4174), and STEM education (S. 3047, H.R. 6104, S. 3324). Some introduced bills indicate federal agencies should use the results of NSTC reports (H.R. 3957, S. 3314), and one bill would require that OMB provide Congress with information on NSTC budget and resources (S. 3260).

Sometimes Congress has specified a mix of these mechanisms in legislation. For example, the America COMPETES Act states that the OSTP Director, through the NSTC, should identify and prioritize deficiencies in research facilities and major instrumentation at federal laboratories and national user facilities located at academic institutions.

Role of OSTP Director. Some reports from the science and technology community state that they would like the OSTP Director to take a greater role in coordination, priority-setting, and budget allocation regarding the R&D budget,[61] energy;[62] STEM education;[63] international science and technology policy;[64] and

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[59] For more information, CRS Report RL34401, *The National Nanotechnology Initiative: Overview, Reauthorization, and Appropriations Issues*, by John F. Sargent.

[60] For more information, see CRS Report RS22865, *The Small Business Innovation Research Program: Reauthorization Efforts,* by Wendy H. Schacht.

[61] Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf].

[62] Senator Jeff Bingaman, "The Energy Challenge We Face and The Strategies We Need," The Karl Taylor Compton Lecture, Massachusetts Institute of Technology, April 25, 2008 at [http://energy.senate.gov/public/_files/ComptonLectureJFB.pdf].

[63] National Science Board, *National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, and Mathematics Education System* (Ballston, VA: National Science Foundation, 2007) at [http://www.nsf.gov/nsb/documents/2007/stem_action.pdf].

[64] National Science Board, *International Science and Engineering Partnerships: A Priority for U.S. Foreign Policy and Our Nation's Innovation Enterprise*, NSB 08-4 (Arlington, VA: National Science Foundation, 2008), at [http://www.nsf.gov/nsb/publications/2008/nsb084.pdf]. Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf]. Also, see CRS Report RL34503, *Science, Technology, and American Diplomacy: Background and Issues for Congress*, by Deborah D. Stine.

federal-state science and technology policy.[65] In addition, some in the S&T policy community have suggested that the OSTP Director play a greater role in EOP policy bodies that are involved in priority-setting and budget allocation such as OMB, NEC, CEQ, DPC, and the NSC.[66] For example, the OSTP Director could be required to play a greater role (e.g., certification) in setting priorities at the federal agencies, particularly for multi-agency and inter-agency activities.

Role of NSTC. Another recommendation in these science and technology community reports is that NSTC's authority should be equivalent to that of the NSC.[67] The NSTC, they believe, lacks the influence of NSC because it does not have the same statutory authority, staff, or budget.

For example, during the Clinton Administration, six NSTC Presidential Review Directives (PRD)[68] were issued. The PRDs served as the basis for gathering information, and policy options for the President. President Clinton then had this information available as he developed eight Presidential Decision Directives (PDD) establishing new policy.[69] According to OSTP, the Bush Administration took a different approach instead issuing executive orders or executive memoranda following NSTC deliberations instead of directives.[70]

When asked about issues such as these, OSTP Director Marburger indicated that federal agencies are tasked with these issues, and that OSTP already interacts with other EOP agencies. Further, stated Dr. Marburger, existing interagency coordination efforts are sufficient, and the federal agencies that develop and fund those programs should take a leadership role in coordinating activities.[71] Some in the S&T

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[65] Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf].

[66] Ibid.

[67] Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf].

[68] For more information, see CRS Report 98-611, *Presidential Directives: Background and Overview*, by Harold C. Relyea.

[69] A list is available at [http://www.fas.org/irp/offdocs/direct.htm].

[70] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 25, 2008. Examples of some executive orders and memoranda regarding space and aerospace issues are available at [http://www.ostp.gov/cs/issues/space_aeronautics] and [http://www.whitehouse.gov/news/releases/2006/12/20061220-7.html].

[71] See, for example, John H. Marburger, Director, OSTP, Testimony before the House Committee on Science and Technology, Subcommittee on Research and Science Education, *International Science and Technology Cooperation*, 110th Cong. 2nd sess., April 2, 2008, at [http://democrats.science.house.gov/Media/File/Commdocs/hearings/2008/Research/2apr/

community, however, believe this puts S&T in a supportive role, regardless of the issue, rather than exerting the more prominent influence they believe S&T should have on public policy in some situations.[72]

OSTP Role in the Communication of Scientific and Technical Information by Federal Agency Scientists and Engineers

The OSTP also plays in the communication of scientific and technical information developed and analyzed by federal scientists and engineers. For example, OSTP, as part of a process managed by OMB, reviews scientific and technically- related testimony to Congress.

During the Bush Administration, there were charges, primarily related to environment, public health, and national security issues, that the "integrity of science" was adversely affected through politicization.[73] These allegations contend that Administration officials restricted the ability of federal scientists and engineers to provide information, instructed them to change their research reports, or modified the congressional testimony of federal scientific and technical agency leadership that did not support the Administration's views. OSTP Director Marburger stated that such allegations are "sweeping generalizations based on a patchwork of disjointed facts and accusations that reach conclusions that are wrong and misleading."[74]

The 110th Congress responded to concerns about Administration involvement in the communication of scientific and technical information by federal agency scientists and engineers in several ways. The America COMPETES Act (P.L. 110-69, §1009) directs OSTP to develop an overarching set of principles to ensure the communication and open exchange of data by federal scientists and engineers. On May 28, 2008, in response to this requirement, OSTP sent a memorandum to federal agencies that sponsor research. The memorandum provides guidance and the following "Core Principle for Communication of the Results of Scientific Research Conducted by Scientists Employed by Federal Civilian Agencies":

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[71] (...continued)
Marburger_Testimony.pdf].

[72] Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004) at [http://www.fas.org/pubs/_docs/flying_blind.pdf].

[73] See, for example, Union of Concerned Scientists, *Scientific Integrity in Policy Making: Securing the Integrity of Science in Policy Making*, February 2008 at [http://www.ucsusa.org/scientific_integrity/restoring/federal-science.html]; and Rena Steinzor, Wendy Wagner, and Matthew Shudtz, *Saving Science from Politics: Nine Essential Reforms of the Legal System*, Center for Progressive Reform, July 2008 at [http://www.progressivereform.org/articles/SavingScience805.pdf].

[74] See, for example, OSTP, "Statement by President Bush's Science Adviser and Director of the Office of Science and Technology Policy John H. Marburger III on Union of Concerned Scientists Document and Press Release," press release at [http://www.ostp.gov/galleries/press_release_files/jhmStatementUCS27-8-04.pdf].

> Robust and open communication of scientific information is critical not only for advancing science, but also for ensuring that society is informed and provided with objective and factual information to make sound decisions. Accordingly, the Federal government is committed to a culture of scientific openness that fosters and protects the open exchange of ideas, data and information to the scientific community, policymakers, and the public.[75]

The memorandum also indicates that NASA's science communications policy should be a model for other federal agencies.[76] The NASA policy states that, "In keeping with the desire for a culture of openness, NASA employees may, consistent with this policy, speak to the press and the public about their work." Exceptions exist for privileged and other controlled information.

Members of Congress also introduced H.R. 985, the Whistleblower Protection Enhancement Act of 2007. This act would enhance existing whistleblower protections for all federal employees, including extending protection to science-based agency staff. The bill would do so by including as part of the definition of "abuse of authority," "any action that compromises the validity or accuracy of federally funded research and analysis" and "the dissemination of false or misleading scientific, medical, or technical information."[77]

Some S&T policy advocacy groups have proposed scientific communication policy changes for the next Administration.[78] Among these proposals are that an executive order be issued requiring federal agency leadership to monitor scientific integrity within their agency and submit an annual report to OSTP with their observations and actions. Other proposed actions are reversing Executive Order 13422[79] so that OMB is not permitted to conduct a political review of scientific documents; enhancing whistleblower protections, including strengthening the Office of Special Counsel;[80] requiring that scientific studies used to inform regulatory policy

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[75] OSTP, "Principles for the Release of Scientific Research Results," Memorandum, May 28, 2008, at [http://www.ostp.gov/galleries/default-file/Research%20Results.pdf]. Note that this memorandum regards the communication of scientific data and information, not science and technology policy.

[76] NASA's policy is available at [http://www.nasa.gov/pdf/145687main_information_policy.pdf].

[77] CRS Report RL33918, *The Whistleblower Protection Act: An Overview*, by L. Paige Whitaker.

[78] Union of Concerned Scientists, *Scientific Integrity in Policy Making: Securing the Integrity of Science in Policy Making*, February 2008 at [http://www.ucsusa.org/scientific_integrity/restoring/federal-science.html]; and Rena Steinzor, Wendy Wagner, and Matthew Shudtz, *Saving Science from Politics: Nine Essential Reforms of the Legal System*, Center for Progressive Reform, July 2008 at [http://www.progressivereform.org/articles/SavingScience805.pdf].

[79] Executive Order 13422, "*Further Amendment to Executive Order 12866 on Regulatory Planning and Review*," 72 Federal Register 14, January 23, 2007, pp. 2763-2765, at [http://edocket.access.gpo.gov/2007/pdf/07-293.pdf].

[80] The Office of Special Counsel is an independent agency that receives allegations of (continued...)

be disclosed and docketed prior to the decisionmaking process; reforming agency communication and media policies;[81] and providing the public with both the scientific results or analysis used in policymaking and the ability to include a minority report if there are any significant dissenting scientific evidence or opinions.[82]

Stature and Influence of PCAST

Unlike NSTC, PCAST was not the subject of legislative activity in the 110th Congress. However, some in the S&T policy community believe that PCAST does not have the stature and influence it once had, and PCAST focuses now on a narrower set of issues less likely to be of presidential-level interest.[83] For example, they state that while President George H.W. Bush held the first PCAST meeting at Camp David and participated in PCAST meetings, Presidents Clinton and George W. Bush only met occasionally for short periods of time with the PCAST chair or committee members.

As a federal advisory committee, the PCAST is unusual in that the executive order creating it states it will be co-chaired by the OSTP Director and one of its members, as opposed to having an independent chair, not directly associated with the Administration. Most federal advisory committees do not have Administration staff as members of their committees or as chairs. If Administration staff are included as part of the advisory committee, it is generally in an ex-officio role (e.g., National Science Board). The inclusion of the OSTP Director as both member and co-chair may reduce PCAST's ability to provide independent thinking to the White House and may place the OSTP Director in an awkward position if PCAST members disagree with White House policy.

The Bush Administration OSTP staff countered that some of the more narrowly focused topics on which PCAST has written reports were in response to

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[80] (...continued)
prohibited personnel practices, investigates such allegations, and conducts investigations of possible prohibited personnel practices on its own initiative, absent any allegation. For more information, see CRS Report RL33918, *The Whistleblower Protection Act: An Overview*, by L. Paige Whitaker.

[81] For a discussion of this issue on an agency-specific basis, see Union of Concerned Scientists, *Freedom to Speak?: A Report Card on Federal Agency Media Policies*, 2008 at [http://www.ucsusa.org/assets/documents/scientific_integrity/Freedom-to-Speak.pdf].

[82] Union of Concerned Scientists, *Scientific Integrity in Policy Making: Securing the Integrity of Science in Policy Making*, February 2008 at [http://www.ucsusa.org/scientific_integrity/restoring/federal-science.html]; and Rena Steinzor, Wendy Wagner, and Matthew Shudtz, *Saving Science from Politics: Nine Essential Reforms of the Legal System*, Center for Progressive Reform, July 2008 at [http://www.progressivereform.org/articles/SavingScience805.pdf].

[83] Center for the Study of the Presidency, Study Group on Presidential Science and Technology Personnel Advisory Assets, "*Presidential Leadership to Ensure Science and Technology in Service of National Needs: A Report to the 2008 Candidates,*" Summer 2008 at [http://www.thepresidency.org/pubs/science_tech_2008.pdf].

congressional requirements for a presidential-level commission to examine an issue. The OSTP staff also asserted that the degree to which PCAST members have met with the President and the influence of PCAST reports does not differ that much from the previous Administration.[84]

Some S&T policy organizations have suggested strengthening PCAST by broadening its mandate, explicitly including national and homeland security issues, enhancing its independence, and increasing its staff significantly.[85] These suggestions include recommendations to make the chair of PCAST solely one of its members, providing all members with security clearances, and appointing them to staggering and overlapping terms unrelated to presidential and congressional election cycles.

The S&T community also suggests that the number of Presidential advisory committees be increased. For example, some in the community propose advisory committees focused on specific issues of S&T policy issues, such as a Federal-State Science and Technology Council to enhance dialogue with the states, particularly on STEM education.[86]

The primary challenges to implementing this recommendation are cost and Federal Advisory Committee Act (P. L. 92-463) requirements regarding justification of any new advisory committee, membership, and ethics rules (including financial disclosure) that may make it challenging to recruit committee members.[87] Other options are to commission non-federal advisory committees, such as those of the National Academies,[88] to address short-term topics of interest.

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[84] Based on CRS discussions with Stanley Sokul, Chief of Staff, OSTP, August 20, 2008.

[85] See for example, Carnegie Commission on Science, Technology, and Government, *Science & Technology and the President* (New York: Carnegie Corporation of New York, October 1988); Henry Kelly, Ivan Oelrich, Steven Aftergood, and Benn H. Tannenbaum, *Flying Blind: The Rise, Fall and Possible Resurrection of Science Policy Advice in the United States* (Washington, DC: Federation of American Scientists, 2004); and Center for the Study of the Presidency, Study Group on Presidential Science and Technology Personnel Advisory Assets, "*Presidential Leadership to Ensure Science and Technology in Service of National Needs: A Report to the 2008 Candidates*," Summer 2008 at [http://www.thepresidency.org/pubs/science_tech_2008.pdf].

[86] Jennifer Sue Bond, Mark Schaefer, David Rejeski, Rodney W. Nichols, *OSTP 2.0: Critical Upgrade: Enhancing Capacity for White House Science and Technology Policymaking: Recommendations for the Next President* (Washington, DC: Woodrow Wilson International Center for Scholars, June 2008) at [http://wilsoncenter.org/news/docs/OSTP%20Paper1.pdf]; and Center for the Study of the Presidency, Study Group on Presidential Science and Technology Personnel Advisory Assets, "*Presidential Leadership to Ensure Science and Technology in Service of National Needs: A Report to the 2008 Candidates*," Summer 2008 at [http://www.thepresidency.org/pubs/science_tech_2008.pdf].

[87] For more information, see CRS Report RL30260, *Federal Advisory Committees: A Primer*, by Wendy R. Ginsberg.

[88] The National Academies is the collective name for the National Academy of Sciences (NAS), National Academy of Engineering (NAE), the Institute of Medicine (IOM), and the (continued...)

Options for Congress

Congress may consider several legislative options regarding OSTP. First, it may wish to evaluate whether or not OSTP is still needed within the EOP. If so, Congress can continue its current OSTP legislative guidance mechanisms, or it can increase the intensity with which it applies those mechanisms. Currently, the President has discretion over the policies, structure, and personnel of OSTP, NSTC, and PCAST. Congress annually oversees OSTP through the regular authorization and appropriation process and introduces issue-specific bills that identify actions and issues on which Members of Congress believe OSTP should focus. An alternative is for Congress to increase the intensity of its evaluation by holding oversight hearings on OSTP or by amending OSTP's authorization statute.

In evaluating various policy options, it may be important to consider whether the influence of the OSTP Director within the EOP depends more on a personal relationship with the President or on legislated action. Another factor may be the degree to which the President believes S&T advice should be an important factor in decisionmaking. These options and issues are discussed in more depth below.

Allow President Autonomy Over OSTP

Given OSTP's presence within the EOP, one option is for Congress to allow the President to manage OSTP as he or she wishes. The President, with Senate confirmation, would continue to appoint the OSTP Director and Associate Directors; determine OSTP's policy agenda; and organize the management of the office. The President could also continue to use executive orders to manage other activities, such as the formation of NSTC and PCAST.[89]

Some Members of Congress may believe that no changes need to be made in OSTP operations. Others may believe that taking legislative action regrading OSTP would be neither efficient nor effective given its presence in the EOP and the nature of its activities. As described in this report, OSTP and its affiliated organizations have constantly evolved, responding to the changing needs of the Administration and societal needs as well as new scientific and technical challenges and opportunities.

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[88] (...continued)
National Research Council (NRC). The NAS is a private, nonprofit organization, established by a congressional charter approved by Abraham Lincoln in 1863. The National Academies provide independent advice on science and technology matters. For more information on this organization and others, see CRS Report RL34454, *Science and Technology Policymaking: A Primer*, by Deborah D. Stine.

[89] Note that other organizations besides OSTP, NSTC, and PCAST provide analysis and advice to the White House, Congress, and federal agencies. For example, Congress often asks that the National Academy of Sciences or the National Science Board provide this guidance. For more information on these organizations and others, see CRS Report RL34454, *Science and Technology Policymaking: A Primer*, by Deborah D. Stine. For a discussion of this issue, see Roger Pielke, Jr., "Who Has the Ear of the President?," *Nature*, 450:347-348, November 15, 2007, at [http://sciencepolicy.colorado.edu/admin/publication_files/resource-2574-2007.28.pdf].

This may be appropriate given the separation of powers between the legislative and executive branches inherent in the U.S. constitution.

Reevaluate Need for OSTP in the EOP

One fundamental question is whether high-level S&T advice is needed, and, if so, whether a full-time adviser or presidential advisory committee is needed within the EOP.[90] Presidents and their senior advisers may believe that most of their decisions are based on issues of value or value conflicts, so that their need for S&T knowledge is very general. They may feel no requirement for a S&T adviser or related presidential advisory committee to provide opinion or build support for White House decisions.

From a presidential perspective, if the S&T adviser or presidential advisory committee is not committed to the President's agenda and is not willing to represent the Administration's perspective, the President may believe that high-level S&T advice will provide more harm than good. If the S&T adviser has a close relationship with the President, the S&T community may fear this will lead to the politicization of S&T and subvert the S&T adviser's ability to provide independent advice. A historical review of presidential S&T activities since the F.D. Roosevelt Administration illustrates that a presidential S&T adviser or advisory committee may be placed in a challenging position when a difference in opinion exists between the President and the majority of the S&T community. The result may be dismissal or marginalization of S&T consideration from the White House inner circle.[91]

On the other hand, an S&T adviser who understands these sensitivities may be an asset to the Administration, providing confidential advice privately and speaking authoritatively on S&T-related issues for the Administration publically. The S&T adviser can help assess S&T related departments and agencies, resolve competing claims among these agencies, coordinate the efforts of R&D agencies and the external S&T community in national emergencies, and anticipate new and emerging S&T issues. In addition, presidential advisory committees provide an ongoing ability to engage the S&T community each time the President feels the need for external advice.[92]

An alternative approach is making OSTP an independent agency rather than an agency of the EOP. This might lead to an OSTP that is more independent and provide a more optimal distance between the President and the OSTP director. Congress might also benefit from having a centralized source of independent S&T advice, and more control over OSTP's interagency coordination and other activities. If OSTP were no longer part of the EOP, however, it might also be viewed as sufficiently distant from Presidential decisions that neither the Administration or

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[90] The discussion in this section is based on Chapter 8, "Science Advisers at the Presidential Level," in Bruce L.R. Smith, *The Advisers: Scientists in the Policy Process* (Washington, DC: The Brookings Institution 1992).

[91] Ibid.

[92] Ibid.

federal agencies would be sufficiently responsive to its advice or requests. The S&T community objected when a somewhat similar action was taken by President Nixon when he moved the precursor to OSTP from the EOP to NSF.

Continue Current OSTP Legislative Guidance Mechanisms

Congress currently holds hearings as part of the presidential appointee confirmation process, part of the appropriation process, and on issues of interest to a given committee. Through the hearing process and other legislative actions, such as introducing bills, passing laws, and writing related report language, Congress provides direction and guidance to OSTP.

One challenge in undertaking these actions is that OSTP might receive overlapping or conflicting instructions. Resolving these conflicts may prove to be difficult. Additionally, Congress may mandate actions taken by OSTP, but not provide additional funding. In such cases, OSTP may be forced to choose between prioritizing the general statutory activities or specifically mandated priorities due to limited funding.

Increase Intensity of OSTP Oversight Mechanisms

Should Congress wish to take more substantive action, it might consider holding specific oversight hearings on OSTP or amending OSTP authorizing statute, the National Science and Technology Policy, Organization, and Priorities Act of 1976 (P.L. 94-282) to reflect current Congressional priorities. For example, Congress might state in legislation that OSTP should designate staff or undertake activities specifically focused on an issue of concern. Establishing such specific priorities and personnel in statute would limit agency discretion, potentially reducing its ability to address other parts of its statutory mission, while securing a focus on specified topics. In addition, it may become challenging to respond to new and emerging S&T topics. For example, nanotechnology was not an issue during the Reagan Administration, while it is an issue today.

Policy Option Considerations

When policymakers consider these and other options, one important factor is that the influence of the OSTP director, APST, science adviser, or technology adviser, regardless of their title, likely depends on the relationship between whomever is appointed to that position and the President. While one President may decide to rely heavily on the advice of such an office, another may decide to rely only minimally upon it.

Another factor for Congress to weigh may be the degree to which the President or other top EOP officials generally are interested in S&T policy and the degree to which they believe S&T advice should be an important factor in their decisionmaking. Officials who do not consider S&T an important factor are less likely to solicit input from the S&T adviser. A related issue is the degree to which the President believes that the role of an S&T adviser is to support and express the views of the Administration, versus to provide independent advice and judgment.

If the President prefers a S&T policy adviser who views their role as primarily supporting the Administration's perspective, there may be fundamental differences between the S&T adviser and the S&T community.

Appendix Table. President's Science and Technology Policy Advisers, Executive Office of the President Agency, Interagency Coordination Organization, and Advisory Committee, 1941-2008

President	Advisers with Title(s) (Years in Office)	Executive Office of the President Agency (Year Established)	Interagency Coordination Organization (Year Established)	Advisory Committee (Year Established)
F.D. Roosevelt	**Vannevar Bush**[b] (1941-1945); Director, Office of Scientific Research and Development	Office of Scientific Research and Development (OSRD; 1941)		Science Advisory Board (1933)
Truman[c]	**John Steelman**[b] (1946-1947); Special Assistant to the President (1945-1946); Assistant to the President (1946-1953); Chairman, The President's Scientific Research Board (1946-1947) **Oliver Buckley**[b] (1951-1952); Chair, Science Advisory Committee (SAC) **Lee DuBridge**[b] (1952-1953), Chair, SAC		The President's Scientific Research Board (1946-1947); Interdepartmental Committee for Scientific Research (1947)	Science Advisory Committee (SAC) of the Office of Defense Mobilization (1946)

President	Advisers with Title(s) (Years in Office)	Executive Office of the President Agency (Year Established)	Interagency Coordination Organization (Year Established)	Advisory Committee (Year Established)
Eisenhower	**Lee DuBridge** (1953-1956), Chair, SAC; Science Adviser to the President **Isidor I. Rabi** (1956-1957), Chair, SAC; Science Adviser to the President **James Killian, Jr.** (1957-1959); Special Assistant to the President for Science and Technology; Chair, President's Science Advisory Committee (PSAC) **George Kistiakowsky** (1959-1961), Special Assistant to the President for Science and Technology; Chair, PSAC	Office of the Special Assistant to the President for Science and Technology (1957)	Federal Council for Science and Technology (FCST) (1959)	SAC (1953-56); President's Science Advisory Committee (PSAC; 1957, replaced SAC).
Kennedy	**Jerome Wiesner** (1961-1963), Special Assistant to the President for Science and Technology; Director, OST; Chair, FCST; Chair, PSAC	Office of Science and Technology (OST; 1962)	FCST	PSAC

President	Advisers with Title(s) (Years in Office)	Executive Office of the President Agency (Year Established)	Interagency Coordination Organization (Year Established)	Advisory Committee (Year Established)
Johnson	**Jerome Wiesner** (1963-1964), Special Assistant to the President for Science and Technology; Director, OST; Chair, FCST; Chair, PSAC **Donald Hornig** (1964-1969), Special Assistant to the President for Science and Technology; Director, OST; Chair, FCST: Chair, PSAC	OST	FCST	PSAC
Nixon[d]	**Lee DuBridge** (1969-1970), Science Adviser to the President; Director, OST **Edward David, Jr.** (1970-1973), Science Adviser to the President; Director, OST **H. Guyford Stever** (1973-1974); Science Adviser to the President; Chair, FCST	OST (until 1973, when office abolished)	FCST	PSAC (until 1973, when member resignations were accepted, and no new appointments were made).

President	Advisers with Title(s) (Years in Office)	Executive Office of the President Agency (Year Established)	Interagency Coordination Organization (Year Established)	Advisory Committee (Year Established)
Ford	**H. Guyford Stever** (1974-1977); Science Adviser to the President; Director, Office of Science and Technology Policy (OSTP)	Office of Science and Technology Policy (1976)	Federal Coordinating Council for Science, Engineering, and Technology (FCCSET; 1976, replaced FCST)	Intergovernmental Science, Engineering, and Technology Panel (ISETAP; 1976);[e] President's Council on Science and Technology (PCST; 1976)
Carter	**Frank Press** (1977-1981); Science and Technology Advisor to the President; Director, OSTP; Chair, FCCSET	OSTP	FCCSET dissolved as statutory entity and reestablished under an executive order (1978)	PCST (until 1978, abolished with its functions transferred to President by executive order); ISETAP (in 1978, dissolved as statutory entity and reestablished under an executive order)
Reagan	**George Keyworth, II** (1981-1985), Science Adviser to the President; Director, OSTP **William R. Graham** (1986 - 1989), Science Adviser to the President; Director, OSTP	OSTP	FCCSET	White House Science Council (1982; reports to Science Adviser, not President; established by Science Adviser, not executive order)
G.H.W. Bush	**D. Allan Bromley** (1989-1993), Assistant to the President for Science and Technology; Director, OSTP; Chair, PCAST	OSTP	FCCSET	President's Council of Advisors on Science and Technology (PCAST; 1990)

President	Advisers with Title(s) (Years in Office)	Executive Office of the President Agency (Year Established)	Interagency Coordination Organization (Year Established)	Advisory Committee (Year Established)
Clinton	**John Gibbons** (1993-1998), Assistant to the President for Science and Technology; Director, OSTP; Co-Chair, PCAST **Neal Lane** (1998-2001), Assistant to the President for Science and Technology; Director, OSTP; Co-Chair, PCAST	OSTP	National Science and Technology Council (NSTC; 1993)	PCAST (Name changed to President's Committee of Advisors on Science and Technology; 1993)
G.W. Bush	**John Marburger, III** (2001-present), Science Adviser to the President; Director, OSTP; Co-Chair, PCAST	OSTP	NSTC	PCAST (Name changed back to President's Council of Advisors on Science and Technology; 2001)

Source: Congressional Research Service. The table is based on information from the following sources: *Public Papers of the Presidents* (Washington, DC: GPO) with the following volumes were used as references: Dwight D. Eisenhower (1957, 1960); Lyndon B. Johnson (1962, 1966, 1967); Richard M. Nixon (1969, 1970, 1973), Gerald Ford (1976-1977), Jimmy Carter (1977, 1978), Ronald Reagan (1981, 1983, 1986), and George H.W. Bush (1989); Jeffrey K. Stine, *A History of Science Policy in the United States, 1940-1985*, Report for the House Committee on Science and Technology Task Force on Science Policy, 99th Cong., 2nd sess., Committee Print (Washington, DC: GPO, 1986), available at [http://ia341018.us.archive.org/2/items/historyofscience00unit/historyofscience00unit.pdf]; William T. Golden (ed.), *Science Advice to the President* (New York: Pergamon Press, 1979); William G. Wells, *Science Advice and the Presidency: 1933-1976*. Dissertation, School of Government and Business Administration (Washington, DC: George Washington University, 1977); OSTP, "Previous Science Advisers," website at [http://www.ostp.gov/cs/about_ostp/previous_science_advisors], accessed September 19, 2008; Truman Library at [http://www.trumanlibrary.org/hstpaper/steelman.htm.]; " Lee Alvin DuBridge (Part II) (1901-1993), Interviewed by Judith R. Goodstein," Oral History, February 20, 1981, California Institute of Technology Archives at [http://oralhistories.library.caltech.edu/68/01/OH_DuBridge_2.pdf]; Nixon Presidential Library Archives, Officials of Administration at [http://nixon.archives.gov/thelife/apolitician/thepresident/officialsofadministration.php]; John T. Woolley and Gerhard Peters, The American Presidency Project[online], Santa Barbara, CA: University of California (hosted), Gerhard Peters (database) at [http://www.presidency.ucsb.edu/]; National Archives, "Records of the Office of Science and Technology ," webpage

at [http://www.archives.gov/research/guide-fed-records/groups/359.html]. Other sources include Executive Orders 9912, 9913, 10807, 12039, 12881, 12882, 13226; Reorganization Plan No. 2 of 1962; Reorganization Plan No. 1 of 1973; and Reorganization Plan No. 1 of 1977: Executive Order 9912, "Establishing the Interdepartmental Committee on Scientific Research and Development," 12 *Federal Register* 8799, December 27, 1947 at [http://www.presidency.ucsb.edu/ws/index.php?pid=60725]; Executive Order 9913, "Terminating the Office of Scientific Research and Development and Providing for the Completion of its Liquidation,"12 *Federal Register* 8799, December 27, 1947 at [http://www.presidency.ucsb.edu/ws/index.php?pid=78155]; Executive Order 10807, "Federal Council for Science and Technology, 24 *Federal Register* 1897, March 17, 1959; Executive Order 12039, "Relating to the Transfer of Certain Science and Technology Policy Functions," 43 *Federal Register* 8095; February 28, 1978 at [http://www.presidency.ucsb.edu/ws/index.php?pid=30416]; Executive Order 12881, "Establishment of the National Science and Technology Council," 58 *Federal Register* 226, November 23, 1993, p. 62491 at [http://www.archives.gov/federal-register/executive-orders/pdf/12881.pdf]; Executive Order 12882, "Executive Order 12882 - President's Committee of Advisors on Science and Technology," 58 *Federal Register* 226, November 26, 1993, p. 62493 at [http://www.archives.gov/federal-register/executive-orders/pdf/12882.pdf]. Executive Order 13226, "President's Council of Advisors on Science and Technology," 66 *Federal Register* 192, October 3, 2001, pp. 50523-52524 at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr03oc01-141.pdf]; U.S. President (Kennedy), "Special Message to the Congress Transmitting Reorganization Plan 2 of 1962," *Public Papers of the Presidents of the United States: John F. Kennedy*, 1962, March 29, 1962, at [http://www.presidency.ucsb.edu/ws/index.php?pid=24601&st=Reorganization+Plan+No.+2+of+1962&st1=]; U.S. President (Nixon), "Message to the Congress Transmitting Reorganization Plan 1 of 1973 Restructuring the Executive Office of the President," *Public Papers of the Presidents of the United States: Richard M. Nixon*, January 26, 1973, at [http://www.presidency.ucsb.edu/ws/index.php?pid=3819&st=Reorganization+Plan+No.+1+of+1973&st1=]; U.S. President (Carter), "Executive Office of the President Message to the Congress Transmitting Reorganization Plan No. I of 1977," *Public Papers of the Presidents of the United States: Jimmy Carter*, July 15, 1977, at [http://www.presidency.ucsb.edu/ws/index.php?pid=7809&st=Reorganization+Plan+No.+1+of+1977&st1=].

Notes: The science advisers may have additional titles not represented in this table. In recent times, the hierarchy of assistants to the President within the White House Office is as follows, going from high to low: Assistant to the President, Deputy Assistant to the President, Special Assistant to the President. (National Archives and Records Administration, *The United States Government Manual 2007-2008* (Washington, DC: GPO, 2007) at [http://www.gpoaccess.gov/gmanual/browse-gm-07.html])

a. President Theodore Roosevelt appointed the Committee on the Organization of Scientific Work to assess the central organization of government scientific bureaus (agencies) with a focus on eliminating duplication.

b. Opinions differ on who is the first presidential science adviser. On its website, OSTP states it is Oliver Buckley and does not include either Vannevar Bush or John Steelman in its list of presidential science advisors. Others believe the latter two individuals were presidential science advisers as well. As OSRD Director, Vannevar Bush, submitted a report, *Science -The Endless Frontier*, to the President Franklin Roosevelt Administration that is the foundation for today's federal S&T policy. President Truman asked that John Steelman, as Director of War Mobilization and Reconversion in the EOP, chair a Presidential Scientific Research Board that was to make recommendations on how to enhance coordination and efficiency of federal R&D. Once this report was released, President Truman asked Steelman, a Presidential Assistant, to act as a liaison between the President and the newly formed Interdepartmental Committee on Scientific Research and Development. Buckley, DuBridge, and Rabi were all Chairs of the Science Advisory Committee and as such, were given the title of Presidential science advisers. For more discussion of this issue, see "Oral History Interview with William T. Golden" at [http://www.trumanlibrary.org/oralhist/goldenw.htm].

c. For an understanding of the charges to the different scientific advisory boards and committees, see "Letter to the Chairman, Science Advisory Committee" at [http://trumanlibrary.org/publicpapers/viewpapers.php?pid=301]; executive order establishing the President's Scientific Research Board, available at [http://www.trumanlibrary.org/executiveorders/index.php?pid=467]; and the Interdepartmental Committee for Scientific Research, available at [http://www.trumanlibrary.org/publicpapers/index.php?pid=1847&st=&st1=].

d. On January 26, 1973, as part of a reoganization plan, the Office of Science and Technology within the Executive Office of the President was abolished. All of its duties, including that of Science Advisor, were transferred to the National Science Foundation (NSF). As a result, the NSF Director became the Science Adviser. For more details, see [http://www.presidency.ucsb.edu/ws/index.php?pid=3819&st=&st1=].

e. ISETAP members included the OSTP Director, NSF Director, and state, local, and regional officials.