Center for Science and Democracy at the Union of Concerned Scientists

FACT SHEET

ROADMAP FOR SCIENCE IN DECISIONMAKING

Strengthening Science and Scientific Integrity at the Office of Science and Technology Policy

Recommendations for 2021 and Beyond

HIGHLIGHTS

The Office of Science and Technology Policy (OSTP) plays a central role in identifying the United States' most pressing science and technology challenges, and informing efforts to address those challenges. The Union of Concerned Scientists has compiled actions the OSTP should take to take in order to make improvements to science-based decisionmaking across federal agencies, including:

- ***Filling vacant science positions quickly and efficiently to restore scientific capacity to the federal workforce.***
- ***Ensuring that the president and the OSTP receive expert advice and guidance from the nation's top science and technology leaders.***
- ***Strengthening whistleblower protections for scientists who expose violations of scientific integrity policies.***
- ***Developing a strong science and technology budget that reflects pressing research and development needs.***

The White House Office of Science and Technology Policy (OSTP) plays a critical role in setting the US science and technology agenda, as well as in coordinating experts across and outside the federal government to seek guidance on and help with implementing that agenda (OSTP n.d.c). The office also helps to set the White House's science and technology budget, plays a significant role in fostering international relationships on science and technology, and informs the president on critical science and technology issues.

Without direction from the OSTP, the United States would find it more difficult to coordinate the nation's strategies for tackling the most pressing science and technology matters of our time—from reducing the spread of the novel coronavirus and developing and distributing vaccines for the virus, to mitigating the effects of climate change, addressing global security threats, and finding a solution to antibiotic resistance.

However, the federal government has lacked leadership and guidance from the OSTP since 2017, and the office has taken a back seat on science and technology matters. It took the Trump administration two years to appoint an OSTP director; prior presidents have nominated their OSTP directors earlier, some even before their inaugurations. Beginning with Inauguration Day 2017, the qualifications of individuals making decisions about research and development budgets have been unclear (Science As Fact 2018). Further, the number of OSTP staff members has been lower in the first three years of the Trump administration than in the Obama, George W. Bush, and Clinton administrations (Sargent and Shea 2020). Surprisingly, the OSTP director was not among those initially asked to serve on the White House Coronavirus Task Force (McLaughlin 2020).

Bill Ingalls/NASA

OSTP did not have an acting director for two years; Kevin Droegemeier assumed the post in early 2019. In 2021, the president should appoint a nationally respected scientist or engineer to this post within their first 100 days in office.

Historically, the office has played a central role in helping the nation address science and technology challenges, but it has been less prominent in leading on these issues since 2017. As a result, many critical science-based issues, including a global pandemic, will require immediate and strong leadership in 2021 for putting in place effective science-based policies and solutions.

The president and OSTP leadership should take the following steps in their first 100 days of the new administration to ensure that the office can fulfill its duties:

- The president should appoint a nationally respected leader to be assistant to the president for science and technology and serve at the cabinet level. This individual should also serve as director of the OSTP (Bond et al. 2008).
  - For this key position, the president should choose a scientist or engineer of significant national standing, with advanced degrees in a science or engineering field. The president should make every effort to nominate an individual from groups underrepresented in science, technology, engineering, and mathematics.
  - The president should choose a person who understands the US innovation system, is familiar with issues of global cooperation and competition, and possesses extensive networks in the science and technology community. The person also must have strong leadership and interpersonal skills.
- The president should nominate for Senate confirmation the full complement of four associate directors of the OSTP. The OSTP director should assign one associate director to serve as the senior member of the National Security Council staff (Bond et al. 2008).
- The OSTP should hire a core staff of approximately 50 experts in science, technology, and policy, enough to ensure the office has the capacity to carry out work on priority issues immediately.
- The president should secure enough funding for the OSTP to ensure it is fully staffed and that important advisory committees, such as the President's Council of Advisors on Science and Technology (PCAST), can start work (DOE n.d.b).
- The president should rescind Executive Order 13875, which mandated the elimination of many federal advisory committees. The president should encourage the restoration of necessary committees that have been eliminated under that order (White House 2019).
- The OSTP should issue a memorandum to agencies providing guidance on balancing political priorities and intellectual merit in the review of grant proposals. The memo also should seek to establish qualifications for individuals who review grant proposals and set criteria to ensure an effective merit review process that is protected from political interference.
- The OSTP should identify high-profile science and technology issues that need to be addressed immediately. The office should coordinate with other entities, including the Office of Management and Budget (OMB), to ensure that the president's science and technology budget signals adequate funding for these issues.
- The OSTP should appoint assistant directors as needed to serve as leaders for science and technology matters that the office identifies as priorities. Of the many priority areas deemed for the office, the OSTP should appoint an assistant director of scientific integrity (SI) to help lead the office's activities on this issue and help coordinate SI officers and their work across science-based agencies.
- The OSTP should develop, coordinate, and participate in interagency working groups on pressing science and technology issues. The office should move quickly to establish working groups on these issues:
  - **The Scientific Integrity Working Group** should include from each science-based agency at least one person who oversees that agency's implementation of SI policy. The working group should discuss issues regarding the implementation of SI policies and practices and how agencies might improve them (MacKinney et al. 2020). Additionally, this interagency working group should collaborate with OSTP staff to standardize criteria for SI policies across science-based federal agencies. This information should inform an update to the OSTP's 2010 memo on scientific integrity and issue it by the beginning of 2023 (OSTP n.d.d).
  - **The COVID-19 Working Group**, comprised of public health experts, economists, and OSTP staff, should discuss ways to bolster the consistent, comprehensive collection of case data broken down by race, ethnicity, occupation, sexual orientation, gender identity, and other demographics such as socioeconomic factors and disability status (Desikan, Carter, and Goldman 2020a). It should help identify agency functions that could reduce the spread of the novel coronavirus or lessen community

comorbidities (e.g., reducing air pollution). The group should work to secure a strong budget for research and development on the novel coronavirus, oversee the development and distribution of a vaccine, determine how best to distribute this vaccine to underserved communities and others most at risk, and ensure that scientists can freely interact with and provide accurate scientific information to the public. The committee should investigate effective means to ensure that personal protective equipment is in good supply and available for frontline workers now and well into the future.

– **The Environmental Justice Working Group**, comprised of environmental justice experts across the federal government, environmental justice advocates, community members, and OSTP staff, should work to establish or continue environmental justice activities related to science and technology. The group should develop guidance to ensure that political considerations do not cancel, suppress, or otherwise hinder scientific studies on marginalized communities. Working group members should develop guidance on how agencies could consider cumulative impacts when developing science-based policies that affect underserved communities. In addition, the group should discuss processes that federal agencies might implement to include equity and environmental justice in research, analyses, and science-informed policies.

The Director of the OSTP

The National Science and Technology Policy, Organization, and Priorities Act of 1976, which established the OSTP and the position of OSTP director, codified language specifying the role of the director.[1] The primary function 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 statute requires the OSTP director to advise the president on scientific and technological matters of national concern; evaluate the scale, quality, and effectiveness of federal efforts in science and technology; advise the president on science and technological considerations in regard to federal budgets; and assist the president in coordinating research and development programs across the federal government.

Given the important leadership role of the OSTP director and the position's important functions, the president should nominate an individual to this position quickly.

Once confirmed by the Senate, the OSTP director should take the following actions:

- Provide objective advice, based completely on scientific and technical evidence, to bear on decisions confronting the White House and the nation (Bond et al. 2008).
- Serve as the primary conduit of information on science and technology matters between the Executive Office of the President and the federal and nonfederal science and technology community (Sargent and Shea 2020).
- Meet regularly with the heads of federal agencies, particularly science and technical agencies, to establish and maintain good relations, better understand agency challenges, and identify opportunities to improve effectiveness (Bond et al. 2008).
- Manage the National Science and Technology Council (NSTC), an interagency body established by Executive Order 12881 to coordinate science and technology policy across the federal government (OSTP n.d.a; Clinton 1993).
- Co-chair PCAST. Comprised of external advisors, the council advises the president on matters involving science, technology, education, and innovation policy. It is funded through the Department of Energy (DOE n.d.a). Under Executive Order 13895, the current PCAST was established for a period of two years beginning October 25, 2019, unless the president extends its life (Executive Office of the President 2019).
- Perform certain roles related to national security and emergency preparedness, such as advising the president on the prioritization of radio spectrum and wired communications that support national security and emergency preparedness functions as specified in Executive Order 13618 (Obama 2012). The director of the OSTP should also issue priorities for national security and emergency preparedness communications analyses, research, and development at least once each year (Sargent and Shea 2020).

Given the important role and functions of the OSTP director, the president should nominate an individual to this position quickly.

Priorities for the OSTP

A number of new science and technology issues falling under the OSTP's purview have arisen since 2017. Multiple issues related to scientific integrity have indicated that SI policies and their implementation need to be strengthened (UCS 2020). Further, the loss of many scientific experts across science-based federal agencies has delayed needed work on pressing science and technology matters (Gowen et al. 2020). At the same time, the OSTP has a major role to play as the United States responds to a global pandemic that has taken an extraordinary toll on the lives and livelihoods of people throughout the country (Worldometer n.d.). And the staff of the OSTP will need to pay close attention to how the plague of racism has hampered scientific progress and innovation (Wingfield 2020). Finally, the OSTP will need to carry out its primary functions as well even as it has additional urgent work beginning.

To ensure that the OSTP can provide the president and the president's staff with effective guidance on science and technology matters, as well as coordinate federal science and technology activities to adequately address these pressing matters, the office should take the following steps:

- Update and add specificity to the OSTP's 2010 memo on scientific integrity to ensure that the highest standards regarding scientific processes, facts, and interpretations underlie the administration's policies and that federal science agencies apply those policies consistently (Holdren 2010).
- Issue a memo outlining a strategy for addressing the effects of the novel coronavirus and the disease that it causes, COVID-19, on public health and the economy as it relates to science and technology. The memo should include information on the administration's plan to combat misinformation, secure funding for research and development, oversee the development of a vaccine, ensure the fair and equitable distribution of vaccines and rapid testing, ensure the supply of test components and medical equipment (e.g., ventilators, personal protective equipment), and enable the public to hear from scientific experts working on the virus.
- Develop a plan to fill vacant science positions quickly and efficiently to restore scientific capacity to the federal workforce. The OSTP should coordinate with the Office of Personnel Management to create a streamlined process for hiring qualified government experts, given the large number of experts who have left public service since January 2017.
- Contribute to the development of US foreign policy and participate actively in international activities related to science and technology. The OSTP should collaborate with the Department of State and the US Agency for International Development in developing and negotiating global policies, understanding foreign science and technology capabilities, and charting strategies for engaging with US allies as well as with failed and failing states (Bond et al. 2008).
- Strengthen whistleblower protections for scientists who expose violations of SI policies. The president and the OSTP should support legislation enabling whistleblowers to oppose retaliation by appealing directly to federal courts when the Merit Systems Protection Board does not act on an appeal within 90 days. The president should quickly nominate qualified, independent board members and encourage Congress to speed their appointment.
- Serve as a public-facing entity for the administration's science and technology activities, including providing important scientific information to the public on critical issues in a timely manner. The OSTP should prioritize interacting with underserved communities (e.g., communities of color, low-income communities), which often are disproportionately affected by the government's science-based decisions but have less access to science and policy information.
- Serve as a communications gateway for Congress and its science- and technology-related committees.
- Establish a close working relationship with other major White House policymaking entities, including the Economic Policy Council, Council on Environmental Quality, Domestic Policy Council, and National Security Council.

OSTP staff will need to pay close attention to how racism has hampered scientific progress and innovation in the United States.

The OSTP, Advisory Committees, and External Advice

While the OSTP serves as a communications gateway to the president on science and technology issues, it also should seek input and guidance from experts outside the White House. Fostering relationships with and seeking input from outside experts is critical for the office to develop and implement effective science-based solutions to many critical issues in the United States, especially given limits on the OSTP's budget, staff, and capacity.

Further, the OSTP is mandated to oversee and cochair the NSTC and PCAST. These two committees are integral to advising the president and executive office on science and technology matters. Prior presidents, recognizing the importance of receiving advice from the nation's top leading experts on science and technology issues, nominated members to their advisory committees that produced reports within their first year of holding office (White House 2001; OSTP n.d.b). However, since 2017, advisory committees have been disbanded or their advice disregarded. For example, three-and-a-half years into the current administration, PCAST was still not fully staffed (McGinnis 2020). As of February 2020, PCAST included only nine of the expected 16 members, and most of its members represented various industries (McGinnis 2020; Showstack 2019). The single PCAST report published under the Trump administration reflects those narrow interests: it concerns strengthening leadership in US industries, not advancing science and technology.

To ensure that the president and the OSTP receive expert advice and guidance from the nation's top science and technology leaders, the following steps are needed:

- The president should carefully select and appoint to PCAST nationally known leaders from the public and private sectors in the fields of science and engineering, including social science as well as law (Bond et al. 2008). The committee should be comprised of individuals from the academic, corporate, and nongovernmental organization sectors.
- The president should establish, and the OSTP director should chair, a strong NSTC. It should be fully staffed with experts in science and technology policy from across the federal government and include senior executive service employees, OMB and OSTP staff, and political appointees.
- The NSTC should oversee federal coordination of interagency science and technology matters, including budgets.
- The OSTP should continue its participation in the Committee on Foreign Investment in the United States (CFIUS). The president should emphasize to the OSTP and its director the office's important role in the CFIUS, providing scientific and technical information to properly evaluate foreign investments in the United States. The OSTP should seek to strengthen its role in the CFIUS by dedicating at least one full-time employee, beyond the OSTP director, to serve as an official liaison with the committee.

The Science and Technology Budget

The OSTP oversees the development of the administration's science and technology budget, helping ensure that it reflects and adequately supports research and development priorities. While Congress may not fully fund the White House requests, this budget sends a strong signal of the administration's path forward to tackle pressing science and technology matters. It is critical that the OSTP seek input on research and development needs from multiple agencies, institutions, and experts.

To develop a strong science and technology budget that reflects pressing research and development needs, the president and the OSTP should take the following steps:

- The president should direct the OMB and OSTP to collaborate closely to ensure that agency programs reflect the president's policies and priorities with respect to science and technology (Sargent and Shea 2020).
- The OSTP should ask federal agencies and its own expert committees to recommend research and development priorities. This information, along with input from interagency working groups, should form the basis of discussions to establish the president's science and technology budget.
- The president and the OSTP should develop a joint memorandum early in the annual budget process, providing federal agencies with policy and budget guidance and helping ensure that agency budgets reflect the president's policies and priorities (Bond et al. 2008).
- The president should direct the OSTP to review the elements of all federal agency budgets related to science and technology and to advise the OMB throughout the budget process. The OSTP should work with agencies in developing the science and technology-related elements of their budgets for submission to the OMB and in responding to pass-back guidance (Bond et al. 2008).

Conclusion

The United States is facing some of the most pressing scientific challenges in history. More than 195,000 people have died because of COVID-19 in the United States as of September 16, 2020, and we have yet to contain the spread of the virus or develop a vaccine. At the same time, climate change threatens our aging infrastructure, public health, food system, and homes. Yet research and development to mitigate these dangers have largely stalled since 2017. In this period, we have witnessed the highest documented levels of political interference in the activities of federal scientists, many of whom have left government employ, greatly reducing the capacity for their important work. Police violence has led to civil unrest and highlighted the issue of systemic racism across society, including in the scientific community. This, too, is a public health crisis that demands action on the part of government-supported science and scientists (Desikan, Carter, and Goldman 2020b).

The nation and the world have suffered greatly from the lack of federal leadership in science and technology. In 2021, the OSTP must make science an immediate priority for the federal government. And that office must act quickly to restore and ensure science-based decisionmaking at the White House and in our federal agencies to protect public health and safety and our environment.

Jacob Carter *is the research scientist in the Center for Science and Democracy at UCS.* ***Gretchen Goldman*** *is the research director of the Center.*

ENDNOTE

1. National Science and Technology Policy, Organization, and Practices Act of 1976. 42 USC 6601. https://www.govinfo.gov/content/pkg/STATUTE-90/pdf/STATUTE-90-Pg459.pdf#page=14

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NATIONAL HEADQUARTERS
Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

WASHINGTON, DC, OFFICE
1825 K St. NW, Suite 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

WEST COAST OFFICE
500 12th St., Suite 340
Oakland, CA 94607-4087
Phone: (510) 843-1872
Fax: (510) 451-3785

MIDWEST OFFICE
One N. LaSalle St., Suite 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751

WEB: www.ucsusa.org