FACT SHEET

ROADMAP FOR SCIENCE IN DECISIONMAKING

HIGHLIGHTS

The integrity of scientific research, and of policies based on this research, is best preserved when it is protected from political, ideological, and financial influences. The Union of Concerned Scientists and the University of California, Irvine School of Law Center for Land, Environment, and Natural Resources have compiled actions that the federal government should take to prevent conflicts of interest at federal agencies, including:

- Ensuring that federal officials, including the Executive Office of the President, have access to impartial scientific advice.
- Directing agencies to develop clear guidance for using peer review in scientific assessments.
- Ensuring that science advisory committees have a balance of relevant scientific disciplines.
- Preserving independent oversight by each agency's Office of Inspector General.



UCI LaW Center for Land, Environment and Natural Resources (CLEANR)

Conflicts of Interest at Federal Agencies

Recommendations for 2021 and Beyond

To preserve its integrity as a policymaking tool, scientific research, including how it is translated into federal policy, must be protected from political, ideological, and financial influences. The ethical code of conduct for federal employees specifically requires the removal or management of financial conflicts of interest that would affect an employee's objectivity and attention to activities, calling into question that person's impartiality (OGE 2017). This is critical: when people with vested political, ideological, or financial interests influence decisions, the resulting policy outcomes are less likely to serve the public interest and more likely to jeopardize the health of people and the environment.

In May 2019, the Center for Science and Democracy at the Union of Concerned Scientists (UCS) and the University of California, Irvine School of Law Center for Land, Environment, and Natural Resources (CLEANR) convened a roundtable that brought together leading scientists, scholars, advocates, and policymakers to explore potential protections for scientific research and its use in federal policymaking.¹ Based on extensive research and the roundtable discussions, UCS and CLEANR offer the following recommendations for the president and administration to address the broad set of issues related to conflicts of interest.

Political Appointments

Political appointments during the Trump administration have been fraught with conflicts of interest (Kravitz et al. 2019). To take one example, appointments for powerful Department of Interior (DOI) positions have gone to individuals who had previously lobbied for the fossil fuel industry. Former Interior Secretary Ryan Zinke keynoted a Louisiana Oil and Gas Association luncheon, where he declared, "Our government should work for you, the oil and gas industry" (LOGA 2018).



A May 2019 roundtable brought together science policy experts in the academic, advocacy, and legal fields to discuss how best to protect scientific research and its use in federal policymaking. Conflicts of interest in federal agencies are a major barrier to scientific integrity, unduly influencing public policy to favor industry and corporate profits over public health and safety.

Interior Secretary David Bernhardt, while in office, has also engaged on issues that were part of his portfolio as a lobbyist. For example, before serving as interior secretary, he sought to loosen protections for endangered fish as a lobbyist and lawyer for Westlands Water District in California's Central Valley (Davenport 2019a; Davenport 2019b). Further, the DOI's inspector general investigated the actions of Assistant Secretary Douglas Domenech and found he violated federal ethics requirements when he met with his former employer about matters he previously worked on—directly weakening endangered species protections (DOI 2019).

Unfortunately, the DOI is not unique in this respect. Across federal agencies under the Trump administration, conflicted appointments and ethics failures have resulted in policy agendas that prioritize industry preferences over the public interest, with very few checks.

In 2020 and beyond, the administration should work with federal agencies to improve conflict-of-interest policies and practices for political appointees.

Agencies should ensure that conflict-of-interest policies include the following provisions:

- Bar political appointees with financial interests that would be affected by policies on which they work from holding decisionmaking authority on those issues or otherwise having undue influence on policy outcomes.
 - Establish criteria for issuing conflict-of-interest waivers (Bipartisan Policy Center 2009).
 - Stipulate in all conflict-of-interest waivers the parameters of permitted participation and release this information to the public before major decisions are made (Kinsella et al. 2020).
- Require political appointees to recuse themselves from policy decisions involving any party that was their employer or client during the previous two years, regardless of whether they maintain financial ties to that party. Enforce the recusal.
 - Require senior political officials to regularly report to agency ethics officers the agenda items from which they recuse themselves.
 - Put protocols in place for employees to report breaches of ethics agreements to inspectors general for further investigation and ensure the anonymity of reporting employees.
- Bar political appointees from lobbying their agencies after they leave government service for the duration of the administration in which they serve but no less than two years (Kinsella et al. 2020).

- Require all political appointees to make timely public disclosure of conflicts of interests and to issue recusal statements.
- To promote accountability, require timely public posting of agency visitor logs and calendars of political appointees, other than information exempt under the Freedom of Information Act.
- Require the Office of Personnel Management to maintain an online public directory of all government political appointees and their positions, including acting officials. Require agencies to update information they provide for this directory regularly.²

To avoid conflicts of interest in political appointments and ensure that federal officials, including the Executive Office of the President, have access to impartial scientific advice, the president should take these steps:

- Issue an executive order requiring all science agencies that do not have an Office of the Chief Scientist to have a chief science officer (NASEM 2008; Brennan Center for Justice et al. 2020).
- To close the gap of 21 science positions unfilled by the Trump administration as of July 2020, commit to filling open science leadership positions (as determined by IOM 2008) with individuals who have specialized training or experience and who meet the limits set forth by the Federal Vacancies Reform Act.³
- Appoint a widely respected scientist to the position of science advisor to the president and nominate that person to direct the Office of Science and Technology Policy (OSTP).
- Require agencies to distinguish between scientific questions and policy questions in notices of proposed rulemaking and in guidance informed by science (Bipartisan Policy Center 2009).
- Require agencies to develop guidance to help ensure that their syntheses of scientific literature underlying significant, science-intensive decisions are conducted by agency scientists who are firewalled from political staff and external interest groups (McGarity and Wagner 2019).
 - Direct agency political staff to identify the questions that scientific research is expected to inform. Scientific staff should conduct a publicly available literature search as the first step in the decisionmaking. This search and other parts of the decisionmaking process (e.g., the development of artificial intelligence or computational models) should be protected from political influence:

- Record and make public scientific synthesis documents before they go to political staff.
- Log and publish, as part of the administrative record, all communications between staff and political officials and/or interest groups concerning these scientific syntheses and in the decisionmaking process (Kinsella et al. 2020).

Scientific Peer-Review Process

Building on the Office of Management and Budget's 2005 Peer Review Bulletin, the OSTP should direct agencies to develop clear guidance for using peer review in scientific assessments (OMB 2005). Further, the OSTP should ensure that agencies apply the guidance consistently. The guidance should include these provisions:

- Affirm that scientific peer review is the appropriate standard for ensuring the quality of agency scientific information.
- Bar those with financial ties to institutions or entities potentially affected by the review—including reviewers, government contractors, and agency staff administering the process—from involvement in the peer-review process.
 - Establish criteria for issuing conflict-of-interest waivers.
 - Stipulate in all conflict-of-interest waivers the parameters of permitted participation and release this information to the public before major decisions are made (Kinsella et al. 2020).
- Require that scientists involved in a peer review of agency scientific documents be technically qualified, and that agencies use at least one peer reviewer external to the agency whenever possible.
- Require agencies to make publicly available peer reviewers' substantive comments on scientific documents and agency responses to those comments, while protecting the anonymity of reviewers.

Federal Advisory Committees

To ensure that decisions are science-based and publicly accountable, the federal government has long relied on the advice of external scientists serving on federal advisory committees (FACs). Since the start of the Trump administration, however, science advisory committees have been neglected, disbanded, or sidelined. This is especially the case at the Environmental Protection Agency (EPA). The agency has disbanded the Particulate Matter Review Panel, prevented the Scientific Advisory Committee on Chemicals from advising on certain decisionmaking processes, and replaced committee members with individuals who have clear conflicts of interest (Reed et al. 2018). In particular, after issuing a memo barring scientists with EPA grants from serving on advisory committees, the agency announced Louis Anthony Cox Jr. as the new chair of its Clean Air Scientific Advisory Committee (CASAC). EPA officials recommended that former EPA administrator Scott Pruitt not appoint Cox due to possible financial conflicts of interest, lack of impartiality, and lack of relevant scientific expertise (Carper and Whitehouse 2018; US Senate 2018). Pruitt ignored staff recommendations and appointed Cox despite his lack of relevant scientific credentials, his fringe scientific views on the role of causal analysis in ambient air quality standards, and his long history of questioning the scientific basis for proposed public protections on behalf of regulated industries (Goldman and Dominici 2019).

Cox's proposals as chair of CASAC have endangered public health protections, and experts in the scientific community have expressed concern that he has compromised the agency's ability to get adequate scientific advice and set a health-protective standard on particulate matter (Frey et al. 2018; Samet 2018; Goldman and Dominici 2019). Decisions to appoint conflicted individuals to advisory committees can have direct policy and public health consequences. The president should instruct the Office of Government Ethics to provide clear guidelines addressing conflicts of interest on FACs and increase enforcement of conflict-of-interest transparency and management rules.

Guidelines regarding the FAC selection process should include these provisions:

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- Bar those with conflicts of interest from serving on committees unless conflicts are unavoidable—for example, when an individual's experience and technical qualifications are particularly relevant to the topic the committee will address and the agency cannot identify another individual with comparable qualifications who does not have a conflict of interest (Bipartisan Policy Center 2009).
 - Establish criteria for issuing conflict-of-interest waivers.
 - If an agency determines a conflict is unavoidable, require it to provide an explanation for the determination as well as a plan for mitigating the known conflict.

- Stipulate in all conflict-of-interest waivers the parameters of permitted participation and release this information to the public before major decisions are made (Kinsella et al. 2020).
- Define what constitutes a conflict of interest and give examples of actions that would breach the appearance of impartiality. Ensure that the following *do not* constitute a conflict of interest for special government employees or representatives because they do not preclude an objective assessment of scientific information presented to a committee:⁴

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- Taking a public position on issues or having a point of view on policy.
- Receiving a federal research grant and other government funding for scientific work.
- Being a member of a scientific association, even if that association has a stated policy agenda.

To promote transparency in advisory committee deliberations, designated federal officers and advisory committee staff at agencies should take these steps:

- Announce all intentions to form new scientific advisory committees or select new members for existing committees. Make public the process used for committee formation, how agencies screen members and assess committees for balance, and which political officials are involved in the process (Kinsella et al. 2020).
- Make the roster of candidates for membership public, along with all designations as representatives or special government employees, and request comments regarding candidates' potential conflicts of interest.
- Solicit public input on advisory committee charters.
- Announce and enforce relevant conflicts and recusals at every advisory committee meeting.

Agencies should clarify and make public their criteria for appointing advisory committee members as individual special government employees or as organization representatives. They also should ensure that the proper level of scrutiny of conflicts of interest occurs. Science advisory committees should have a balance of relevant scientific disciplines, not views (Bipartisan Policy Center 2009):

• Agencies should issue and enforce policies that representative status is designated when a FAC member is asked to represent the position of a stakeholder or other outside interest group, as opposed to the FAC member's own, individual opinions.

- Agencies should extend disclosure requirements that apply to members designated as special government employees to those designated as representatives, and should require disclosure of past employers and research funding (Kinsella et al. 2020). For committees with a mission solely to provide neutral scientific advice (as opposed to those designed to gather input from diverse stakeholders), ensure that members are appointed as special government employees and vetted for financial conflicts of interest and biases.
- Designated agency ethics officials should evaluate the quality of financial disclosure reviews of special government employees as part of the periodic reviews of agency ethics programs.

Internal Agency Oversight

The independence and integrity of each agency's Office of Inspector General (OIG) is essential for enforcing government ethics regulations. Individuals serving in OIG leadership roles must be qualified to identify, investigate, and deal with waste, fraud, and abuse, including conflicts of interest and the appearance of impropriety.

In 2020, the Trump administration fired two Senateconfirmed inspectors general (IGs) and replaced three acting IGs—all under questionable circumstances—over the course of six weeks, including some who were actively investigating administration officials (Davidson 2020). The Trump administration has also left key oversight positions unfilled by Senate-vetted appointees and allowed sometimes unqualified acting officials to serve for extended periods (POGO 2020).

To preserve independent oversight by OIGs, the president should take these steps:

- Nominate qualified individuals to lead OIGs and fill vacant Senate-confirmed positions that are currently filled by acting IGs (POGO 2019). While confirmation of a nominee is pending, the president should ensure that the acting IG is qualified for the position, as required by the Inspector General Act, and free of conflicts of interest.
- Remove a Senate-confirmed IG from office only when substantial cause warrants it.
- Provide Congress and the public with substantial justification and explanation of cause for removing an agency IG (Grassley 2020).
- Require the Council of the Inspectors General on Integrity and Efficiency to create and make public a list of recommended IG nominees (Grassley and Wyden 2020).

Conclusion

Where federal policy decisions must be informed by scientific evidence, we need qualified, independent individuals who are unencumbered by conflicts of interest and able to make decisions that benefit the public. In contrast to those handselected for specific agendas that undermine the system and heighten distrust of the federal government, the public interest is best served by political appointees and advisory committees that are free from financial or ideological interests. Improvements to conflict-of-interest disclosure and management policies will help prevent such conflicts in the future, restore trust, and enable the public to hold decisionmakers accountable. In turn, this will help ensure that our government bases decisions on scientific evidence, free of financial, ideological, or political conflicts of interest.

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ENDNOTES

- 1. Roundtable participants included Mustafa Santiago Ali (Environmental Justice, Climate & Community Revitalization, National Wildlife Federation), Jay Austin (Environmental Law Institute), Emily Berman (UCS), Jacob Carter (UCS), Joel Clement (Harvard University Belfer Center for Science and International Affairs; UCS), Anita Desikan (UCS), Holly Doremus (UC Berkeley School of Law), Victor B. Flatt (University of Houston Law Center), Robert L. Glicksman (George Washington University Law School), Gretchen Goldman (UCS), Shaina Goodman (National Partnership for Women & Families), James Goodwin (Center for Progressive Reform), Michael Halpern (UCS), Adrienne Hollis (UCS), Rush Holt (American Association for the Advancement of Science), Peter Jenkins (Public Employees for Environmental Responsibility), Melissa Kelly (UCI Law), Martha Kinsella (Brennan Center for Justice), Lauren Kurtz (Climate Science Legal Defense Fund), David Michaels (George Washington University School of Public Health), Amit Narang (Public Citizen), Genna Reed (UCS), Michael Robinson-Dorn (UCI Law), Andrew Rosenberg (UCS), Sidney Shapiro (Wake Forest University School of Law), Patrice Simms (Earthjustice), Ciara Torres-Spelliscy (Stetson University College of Law), Wendy E. Wagner (University of Texas-Austin School of Law), Romany Webb (Columbia Law School Sabin Center for Climate Change Law), Pamitha Weeransinghe (UCS), and Gabriel Weil (Climate Leadership Council).
- See S.3896–PLUM Act of 2020. https://www.congress.gov/bill/116th -congress/senate-bill/3896
- 3. For reference, see the Department of Agriculture's statutory requirements for its chief scientist position, Under Secretary for Research, Education, and Economics: "The Under Secretary shall be appointed by the President, by and with the advice and consent of the Senate, from among distinguished scientists with specialized training or significant experience in agricultural research, education, and economics." 7 USC 6971: Under Secretary of Agriculture for Research, Education, and Economics, §6971. https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title7 -section6971&num=0&edition=prelim

4. Individuals serving as special government employees are subject to executive branch ethics requirements, such as financial disclosure, and they are expected to deliberate on committees in a manner that is free from conflicts of interest. Individuals serving as "representatives" are not government employees or subject to ethics requirements; they are expected to represent the point of view, and potential bias, of a particular stakeholder group (e.g., industry, nongovernmental organization, labor union) (OGE 2016).

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REFERENCES

- Bipartisan Policy Center. 2009. *Improving the Use of Science in Regulatory Policy*. Science for Policy Project, August 5. https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Science -Report-fnl.pdf
- Brennan Center for Justice, Californians for Pesticide Reform, Center for Biological Diversity, Center for Reproductive Rights, Citizens for Responsibility and Ethics in Washington, Environmental Protection Network, Equity Forward, et al., endorsers. 2020. *Restoring Science, Protecting the Public: 43 Steps for the Next Presidential Term*. http://www.thepumphandle.org /wp-content/uploads/2020/06/Restoring-Science-Protecting -the-Public.pdf#page=5
- Carper, Thomas R., and Sheldon Whitehouse. 2018. Letter to Gene L. Dodaro, February 14. https://www.epw.senate.gov/public/_cache /files/9/2/92393cc8-538a-4631-ad4c-0a57f8b8e676/3BC9F5D8 E67D5EA1329CFE774AAA5228.carper-whitehouse-send-new -internal-epa-documents-to-gao.pdf
- Davenport, Coral. 2019a. "Top Leader at Interior Dept. Pushes a Policy Favoring His Former Client." *New York Times*, February 12, 2019. https://www.nytimes.com/2019/02/12/climate/david -bernhardt-endangered-species.html
- ——. 2019b. "Trump's Pick for Interior Dept. Continued Lobbying After Officially Vowing to Stop, New Files Show." New York Times, April 4, 2019. https://www.nytimes.com/2019/04/04/climate /david-bernhardt-interior-lobbying.html
- Davidson, Joe. 2020. "Trump Is Allergic to Independent Oversight. The Inspectors Must Be Protected." *Washington Post*, May 23, 2020. https://www.washingtonpost.com/politics/trump-is -allergic-to-independent-oversight-the-inspectors-must-be -protected/2020/05/22/5ce644f4-9c4b-11ea-b60c-3be060a4f8e1 _story.html
- DOI (US Department of the Interior). 2019. "Investigative Report of Alleged Ethics Violations by the Assistant Secretary for Insular and International Affairs." Office of Inspector General, December 10. https://www.doioig.gov/reports/investigative -report-alleged-ethics-violations-assistant-secretary-insular-and -international

Frey, H. Christopher, Ana V. Diez Roux, George Allen, John Balmes, Judith C. Chow, Douglas W. Dockery, Jack R. Harkema, et al. 2018. Letter to Louis Anthony (Tony) Cox, Jr., and US Environmental Protection Agency, December 10. https://yosemite.epa.gov/sab /sabproduct.nsf/086D8B853E0B63AE8525835F004DC679/%24File /PMRP+Letter+to+CASAC+181210+Final+181210.pdf

Goldman, Gretchen T., and Francesca Dominici. 2019. "Don't Abandon Evidence and Process on Air Pollution Policy. *Science* 363 (6434): 1398–1400. DOI: 10.1126/science.aaw9460

Grassley, Chuck. 2020. "Grassley Leads Bipartisan Bill to Bolster Inspector General Protections." Press release, June 18. https://www .grassley.senate.gov/news/news-releases/grassley-leads-bipartisan -bill-bolster-inspector-general-protections

Grassley, Chuck, and Ron Wyden. 2020. Letter to the Honorable Michael E. Horowitz, April 14. https://www.finance.senate.gov/imo /media/doc/2020-04-14%20CEG%20and%20RLW%20to%20CIGIE %20(IG%20noms).pdf

IOM (Institute of Medicine). 2008. Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in the New Administration. Washington, DC: The National Academies Press. https://doi.org/10.17226/12481

Kinsella, Martha, Rudy Mehrbani, Wendy Weiser, and Daniel I. Weiner. 2020. Executive Actions to Restore Integrity and Accountability in Government. New York, NY: Brennan Center for Justice. https://www.brennancenter.org/sites/default/files/2020-07 /ExecutiveActions_Draft03-2.pdf#page=14

Kravitz, Derek, Al Shaw, Claire Perlman, Alex Mierjeski, and David Mora. 2019. *Trump Town: Track White House Staff, Cabinet Members and Political Appointees Across the Government*. Propublica, October 15, 2019. https://projects.propublica.org/trump-town

LOGA (Louisiana Oil & Gas Association). 2018. Twitter Post. September 18, 2:00 pm. https://twitter.com/LaOilGasAssoc/status /1042111137603567616

McGarity, Thomas O., and Wendy E. Wagner. 2019. "Deregulation Using Stealth 'Science' Strategies." *Duke Law Journal* 68: 1719–1803. https:// scholarship.law.duke.edu/dlj/vol68/iss8/4 NASEM (National Academy of Sciences, Engineering, and Medicine). 2008. Science and Technology for America's Progress: Ensuring the Best Presidential Appointments in the New Administration. Washington, DC: The National Academies Press. https://www.nap .edu/catalog/12481/science-and-technology-for-americas-progress -ensuring-the-best-presidential

OGE (US Office of Government Ethics). 2016. "Advisory Committee Members." February 25. https://www.oge.gov/Web/oge.nsf /Resources/Advisory+Committee+Members

 ---. 2017. "Standards of Ethical Conduct for Employees of the Executive Branch: Final Regulation." https://www.oge.gov/Web/oge .nsf/0/076ABBBFC3B026A785257F14006929A2/\$FILE/SOC%20as %20of%2081%20FR%2081641%20FINAL.pdf

OMB (Office of Management and Budget) 2005. "Final Information Quality Bulletin for Peer Review." *Federal Register*, 70 FR 2664. https://www.govinfo.gov/app/details/FR-2005-01-14/05-769

POGO (Project on Government Oversight). 2019. "The Dangers of Chronic Federal Vacancies." August 6. https://www.pogo.org /analysis/2019/08/the-dangers-of-chronic-federal-vacancies

——. 2020. "Inspector General Vacancy Tracker." May 5. https://www .pogo.org/database/inspector-general-vacancy-tracker

Reed, Genna, Seth Shulman, Peter Hansel, and Gretchen Goldman. 2018. *Abandoning Science Advice: One Year in, the Trump Administration Is Sidelining Science Advisory Committees*. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources /abandoning-science-advice

Samet, Jonathan M. 2018. "Comments Concerning EPA's Integrated Science Assessment (ISA) for Particulate Matter (External Review Draft-October 2018)." December 11. https://yosemite.epa.gov/sab /sabproduct.nsf/02F0FC7F714CAAF08525836000638F9C/%24File /CASAC_ISA_PM_Comment-samet.pdf

US Senate. 2018. "After Pruitt Bars Scientists with EPA Grants from Advisory Committees, Carper and Whitehouse Highlight Concerns with New EPA Appointees' Conflicts of Interest." Committee on Environment and Public Works. Press release, January 9. https:// www.epw.senate.gov/public/index.cfm/2018/1/after-pruitt-bars -scientists-with-epa-grants-from-advisory-committees-carper-and -whitehouse-highlight-concerns-with-new-epa-appointees-conflicts -of-interest

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