

2020

It isn't Easy Being a Bureaucratic Expert: Celebrating the EPA's Innovations

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Recommended Citation

Wendy Wagner, *It isn't Easy Being a Bureaucratic Expert: Celebrating the EPA's Innovations*, 70 Case W. Res. L. Rev. 1093 (2020)

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IT ISN'T EASY BEING A
BUREAUCRATIC EXPERT:
CELEBRATING THE EPA'S
INNOVATIONS

Wendy Wagner[†]

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INTRODUCTION

Fifty years ago, the Environmental Protection Agency (EPA) was created to serve as the nation's expert on all issues environmental. The EPA's 1970 authorizing charter delineates four roles for the new agency, two of which direct the fledgling agency to serve as the nation's expert authority on environmental protection.¹

[†] Richard Dale Endowed Chair of Law, University of Texas School of Law. I am grateful to the members of the Case Law Review for excellent editorial work and to participants at the Law Review's live symposium for helpful comments. This Article is based in part on a report I prepared for the Administrative Conference of the United States (ACUS), which formed the basis for the Administrative Conference Recommendation 2013-3, *Science in the Administrative Process*, 78 Fed. Reg. 41,357 (July 10, 2013). The views herein are mine alone and should not be attributed to the Conference, its staff, or its committees. For the full report, see WENDY WAGNER, *SCIENCE IN REGULATION: A STUDY OF AGENCY DECISIONMAKING APPROACHES* (2013), available at https://www.acus.gov/sites/default/files/documents/Science%20in%20Regulation_Final%20Report_2_18_13_0.pdf [<https://perma.cc/4TBA-WCJE>].

1. See Reorganization Plan No. 3 of 1970, 35 Fed. Reg. 15,623 (Oct. 6, 1970), reprinted as amended in 5 U.S.C. app. at 202-07 (2006) (Two of the EPA's four roles include: "[t]he conduct of research on the adverse effects of pollution and on methods and equipment for controlling it, the gathering of information on pollution, and the use of this information in

Because it is a core element of EPA's mission,² providing high quality expertise remains one of the legally established benchmarks against which we can judge the EPA's success.³ While the demarcation of science from other ways of knowing is intrinsically fuzzy,⁴ it seems uncontested that, at the very least, agencies should make full and rigorous use of the scientific literature in informing policymaking.⁵ Regulatory decisions are more effective and efficient when informed by the very best scientific and technical information. Moreover, if staffed with excellent professionals, agencies are well situated to provide rigorous, policy-relevant scientific information that is difficult to recreate at a grand scale in the private sector. Gillian Metzger argues that the Constitution may even require the administrative state to be staffed with "professional and expert government employees . . . insofar as such career staff are necessary to ensure expertise and institutional stability in agencies."⁶

strengthening environmental protection programs and recommending policy changes"; and "[a]ssisting others, through grants, technical assistance and other means in arresting pollution of the environment").

2. *Our Mission and What We Do*, EPA, <https://www.epa.gov/aboutepa/our-mission-and-what-we-do> [<https://perma.cc/MS29-YBH2>] (last updated Feb. 7, 2018).
3. Despite this clear mission statement, there remains significant skepticism within administrative circles regarding the viability of the expert model, although some of these concerns may result from a much broader definition of "expertise" than used in the article *See infra* text accompanying notes 11-12 ; *see also* REUEL E. SCHILLER, *Reining in the Administrative State: World War II and the Decline of Expert Administration*, in *TOTAL WAR AND THE LAW: THE AMERICAN HOME FRONT IN WORLD WAR II* 185, 191 (Daniel R. Ernst & Victor Jew eds., 2002) (describing disillusionment with agency expertise); Gillian E. Metzger, *Foreward: 1930s Redux: The Administrative State Under Siege*, 131 *HARV. L. REV.* 1, 71-91 (2017).
4. A vast literature in the philosophy and history of science explores what and whether there is actually anything unique embodied in scientific expertise itself. For the purposes of this Article, I bracket these important debates and assume that scientific expertise has qualities that distinguish it from other ways of knowing. See, e.g., NAOMI ORESKES, *WHY TRUST SCIENCE?* (2019). I also assume—purely for the purposes of argument—that if the EPA's role is in part to serve as a rigorous environmental expert, we should ensure as a legal and institutional matter that EPA has an opportunity to make progress on that front.
5. The questions to be informed by this scientific guidance must be framed -- and continuously reviewed -- by society. Experts can provide empirically-based information, but great care must be taken to ensure this information is qualified and constantly checked for embedded value choices. See generally Sheila Jasanoff, *Serviceable Truths: Science for Action in Law and Policy*, 93 *TEXAS L. REV.* 1723 (2015).
6. *Id.* at 89-90.

Yet, over the last fifty years, the integrity of the EPA's expertise has been under almost continuous attack. Industry, members of Congress, executive officials, public stakeholders, and all facets of the media have focused their criticisms—sometimes in unison—at the EPA's use of “bad science” and its failure as the nation's environmental expert.⁷

In this Article, I take a close look behind the media coverage and legal challenges to locate some stunning innovations in the EPA's ability to provide quality scientific advice.⁸ On the Agency's fiftieth anniversary, I spotlight these expert accomplishments, which occur despite considerable political pressure and public controversy. The EPA in these cases has not only fulfilled its mission as a nation's expert, but it has pioneered models for other agencies with regard to how to provide this essential, but hotly contested science advice.

Of course, the EPA is not a monolith, and some of its expert work has, from time to time, rightly sparked public condemnation.⁹ Indeed, even the accomplishments discussed here are full of fits and starts. But extracting some of the EPA's successes in providing expertise tells us something—perhaps a lot—about expert agencies; it also offers valuable lessons for the future. The Trump Administration's targeted, and thus far still only partial, efforts to dismantle some of the EPA's expert-based programs only further underscore the important role of

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7. These charges are widespread and these citations provide only an illustrative sampling. *See, e.g.*, David Hasemyer, *Rep. Lamar Smith Launches New Assault on EPA's "Secret Science"*, INSIDE CLIMATE NEWS, (Feb. 2, 2017), <https://insideclimatenews.org/news/02022017/lamar-smith-epa-house-science-committee> [<https://perma.cc/R9QX-PHXP>] (describing new legislation that aims to increase transparency regarding the science that the EPA administrator relies upon to regulate); David Michaels & Celeste Monforton, *Manufacturing Uncertainty: Contested Science and the Protection of the Public's Health and Environment*, 95 AM. J. PUB. HEALTH S39, S41–43 (2005) (providing examples of industry's strategy of contesting the quality of the agency's science); JUNK SCIENCE, <https://junkscience.com/> [<https://perma.cc/KD8K-843C>] (describing “junk science” predominately related to the EPA) (last visited June 6, 2020).
 8. The innovations highlighted here were identified in a study I prepared as a consultant for ACUS. *See* WENDY WAGNER, SCIENCE IN REGULATION: A STUDY OF AGENCY DECISIONMAKING APPROACHES 29–39 (2013) (analyzing the integration of science into the EPA's regulatory program), available at https://www.acus.gov/sites/default/files/documents/Science%20in%20Regulation_Final%20Report_2_18_13_0.pdf [<https://perma.cc/4TBA-WCJE>].
 9. The tragedy in Flint is one of the most troubling failures in the EPA's expert dossier. *See, e.g.*, ANNA CLARK, THE POISONED CITY: FLINT'S WATER AND THE AMERICAN URBAN TRAGEDY 6 (2018) (describing how the federal government contributed to the health crises arising from the lead in Flint's water).

credible, scientific expertise, as well as the remarkable resiliency of the EPA, even in response to wholesale executive attack.¹⁰

In discussing this expert role for the EPA, it is nonetheless important to be crystal clear about what *is* and *is not* meant by “bureaucratic expertise.” The expert role of the EPA explored here concerns only the Agency’s capacity to provide rigorous scientific information and advice. It does not include the ability of agency experts to select the best regulatory standard or outcome. In the literature, these two very different roles are sometimes conflated: an “agency expert” is portrayed as one that chooses a preferred policy, as well as conducts the underlying analysis.¹¹ That is emphatically not the scope of the expert role considered in this Article. Instead, the focus is simply on the first, advisory step: is the agency able to provide rigorous expert analyses to the nation or is even this advice-giving role undermined by existing administrative procedures?¹²

This Article’s celebration of the EPA’s periodic success as an expert bureaucrat begins in Part I by reconstructing the institutional architecture within which expert agencies must operate. While on the one hand, a significant role for the EPA is tied to the Agency’s ability to provide rigorous scientific expertise to inform policy; on the other, we have placed a number of legal constraints on the EPA’s ability to carry out this goal. Rather than constructing an executive branch that nurtures and encourages excellent expert analysis by agencies, there are key architectural features of administrative process that make it

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10. *See, e.g.*, Brad Plumer & Coral Davenport, *Science Under Attack: How Trump is Sidelining Researchers and their Work*, N.Y. TIMES (Dec. 28, 2019), <https://www.nytimes.com/2019/12/28/climate/trump-administration-war-on-science.html> [<https://perma.cc/S5UQ-X8NC>] (highlighting recent policy changes that curtail using scientific expertise in the EPA’s regulation process). Among the more significant (of many) assaults is a proposed rule that allows political appointees to sidestep scientific staff’s judgment in conducting a review of the relevant research, the overt stacking of external science advisory panels, and the reconfiguration of lines of authority within the Agency to afford the scientific units less independence—all of which provide evidence of the impediments that agency expertise poses to a President eager to control the entire bureaucracy. *See, e.g.*, Thomas McGarity & Wendy Wagner, *Deregulation Using Stealth Science Strategies*, 68 DUKE L.J. 1719, 1724–34 (2019).
 11. My analysis thus investigates a different issue than the one fronted by several others writing on administrative expertise. *See, e.g.*, Kathryn A. Watts, *Controlling Presidential Control*, 114 MICH. L. REV. 683, 706–26 (2016) (discussing politics and expertise as essentially mutually exclusive, and focusing primarily on the role of experts in making policy decisions); Shannon Roesler, *Agency Reasons at the Intersection of Expertise and Presidential Preferences*, 71 ADMIN. L. REV. 491, 521–24, 526–27 (2019).
 12. Through this framing, important yet contested issues are bracketed, such as when or whether the President can, as a legal matter, control agency decisions and set aside expert advice in statutory settings where the mandate weighs scientific expertise heavily as a determining factor.

difficult, and sometimes impossible, for agencies to deliver this much-needed expert advice. Part II then considers the EPA's ability to rise above these institutional impediments at various points in its fifty-year history and nevertheless provide rigorous scientific expertise in spite of the less-than-ideal legal structure for doing so. Part III closes with some thoughts for the future of expert agencies.

I. A HOSTILE INSTITUTIONAL ENVIRONMENT FOR AGENCY EXPERTISE

The scientific research that informs policy is a natural target for political and stakeholder pressure when the findings are inconvenient. Accounts of ends-oriented manipulations of policy-relevant science are legendary.¹³ It should thus come as no surprise that a great deal of scholarly and governmental effort has been dedicated to devising ways to protect applied scientific research and analyses from this type of biasing. Science journals in particular have devised various methods to help protect the integrity of research from external influence.¹⁴ These methods benchmark the rigor of a scientific study or analysis in part by how well the researcher is afforded autonomy and is able to approach the research in a skeptical, open-minded way.¹⁵ Science journals, for example, insist on full disclosures of conflicts of interest, as well as

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13. *See, e.g.*, DAVID MICHAELS, DOUBT IS THEIR PRODUCT: HOW INDUSTRY'S ASSAULT ON SCIENCE THREATENS YOUR HEALTH (2008) (documenting how product-defense consultants have skewed science and used what sounds like science to advantage polluters and manufacturers of dangerous products); DAVID MICHAELS, THE TRIUMPH OF DOUBT (2020); NAOMI ORESKES & ERIC M. CONWAY, MERCHANTS OF DOUBT: HOW A HANDFUL OF SCIENTISTS OBSCURED THE TRUTH ON ISSUES FROM TOBACCO SMOKE TO GLOBAL WARMING (2009) (recounting the "Tobacco Strategy" and how it attacked science and scientists to confuse the public about major issues affecting the planet and peoples' lives); THOMAS MCGARITY & WENDY WAGNER, BENDING SCIENCE (2007) (arguing that scientific institutions of public-health and environmental research are under attack in ways that neither the legal nor the scientific community can acknowledge or combat).
 14. Heavy reputational sanctions also befall scientists who conduct fraudulent or unreliable research in order to advance their own interests or personal agenda. *See, e.g.*, Donald Kennedy, *Responding to Fraud*, 314 SCIENCE 1353, 1353 (2006) (describing how falsified science reports were retracted from publication and outlining various means that the magazine can use to combat false science in the future).
 15. *See, e.g.*, INT'L COMM. OF MED. J. EDITORS, RECOMMENDATIONS FOR THE CONDUCT, REPORTING, EDITING, AND PUBLICATION OF SCHOLARLY WORK IN MEDICAL JOURNALS 1–3 (2019) (describing ways that a researcher can author accurate, clear, reproducible, and unbiased medical journal articles—particularly through full disclosure of financial interests and potential conflicts of interest).

certifications of authorship that include assurances that the author enjoyed full control over all aspects of the research.¹⁶

In designing expert bureaucracies, this same “independence” has become a central structural theme as well. In a series of recent reports, the Organization for Economic Cooperation and Development (OECD) reiterates independence from political and stakeholder control as *the* most important institutional design feature to advance agency expertise.¹⁷ The essential role of agency autonomy has also been spotlighted by other commenters as a central design principle for administrative design.¹⁸ Indeed, without some agency autonomy in conducting the foundational scientific analyses that inform policy (such as a literature review, for instance), there will be no limit to the invisible, ends-oriented tinkering that could occur to bias the analyses.¹⁹ This is especially true if there is no record of these sources of influence.

But administrative processes that govern agency expertise in the United States move in precisely the opposite direction from these best practices. Several key institutional features may, in fact, prove antithetical to nurturing and protecting expert advice within our agencies. These features are not ephemeral or “Trumpian,” but have become hard-wired into the structure of how we design administrative

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16. See, e.g., Bennett Holman & Kevin Elliott, *The Promise and Perils of Industry-Funded Science*, 13 PHIL. COMPASS 1 (2018) (describing the advantages and disadvantages of disclosing private funding for scientific research and potential avenues for progress); Marcus R. Munafo et al., *A Manifesto for Reproducible Science*, 1 NATURE HUM. BEHAV. 1, 1–3 (2017) (arguing for the greater adoption of key measures that can ensure scientific robustness, particularly through disclosing conflicts of interest).
 17. See, e.g., ORG. FOR ECON. COOPERATION AND DEV. (OECD), *THE GOVERNANCE OF REGULATORS GOVERNANCE OF REGULATORS' PRACTICES: ACCOUNTABILITY, TRANSPARENCY AND CO-ORDINATION* (2016) (describing how accountability and transparency can be achieved through informal and formal measures but independence from legislators and the executive must be achieved), available at <https://www.oecd.org/publications/governance-of-regulators-practices-9789264255388-en.htm>; OECD, *BEING AN INDEPENDENT REGULATOR* (2016), (researching how to best develop an independent regulatory framework with accountability and transparency), available at <https://www.oecd.org/publications/being-an-independent-regulator-9789264255401-en.htm>.
 18. See, e.g., 1 NAT'L TASK FORCE ON RULE OF LAW & DEMOCRACY, *PROPOSALS FOR REFORM* 18 (2018) (discussing the importance of “limited contacts” policies that bar communications between the White House and enforcement personnel on specific cases); Cary Coglianese, *The Semi-Autonomous Administrative State*, REG. REV. (Oct. 7, 2019), <https://www.theregview.org/2019/10/07/coglianese-semi-autonomous-administrative-state/> [<https://perma.cc/2WVW-XCP5>] (describing how all agencies need some requisite neutral expertise).
 19. See, e.g., MCGARITY & WAGNER, *supra* note 13, at 60–61 (describing how sponsors shape scientific research at different stages and explaining why scientists may conform to this method).

processes. Despite the centrality of expertise to bureaucracy and public administration, then, the administrative state's architecture presents a series of impediments to this goal of autonomous expertise.

A. Agencies Are Subjected to Political, Top-Down Direction.

Political appointees within the agencies and sometimes in the White House have long enjoyed control over all aspects of their agency's work, including its scientific analyses.²⁰ In some agencies, the very first science-intensive report that is made public is jointly offered between the scientific staff and political officials.²¹ In other cases, even if a political appointee delegates authority to the technical staff and is not engaged in the analytical work, it is technically his or her prerogative to intervene and hold up, and, in some cases alter, that technical analysis if he or she so chooses.²²

Moreover, if there are internal disagreements between the scientific staff and the policy officials, the fact of these disagreements—not to mention their merits and ultimate resolution—are routinely classified as deliberative process and protected from public disclosure under the Freedom of Information Act (“FOIA”).²³ In these internal government

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20. *See, e.g.*, 2 NAT'L TASK FORCE ON RULE OF LAW & DEMOCRACY, PROPOSALS FOR REFORM 1–3 (2019) (proposing multiple ways to prevent the politicization of scientific research and regulatory frameworks within agencies); McGarity & Wagner, *supra* note 10, at 1721, 1723–24 (describing how an administrator can influence the research relied upon to pass regulations); Wendy E. Wagner, *A Place for Agency Expertise: Reconciling Agency Expertise with Presidential Power*, 115 COLUM. L. REV. 2019, 2032–45 (2015) (describing how the White House—particularly through the Office of Information and Regulatory Affairs (OIRA)—can influence agencies' policies).
21. *See, e.g.*, Jori Reilly-Diakun, *Addressing Blurred Lines: Institutional Design Solutions to Transgressions Across the Science-Policy Boundary*, 49 TEX. ENVTL. L.J. 199, 218–20 (2019) (describing a “laissez-faire” review process whereby experts and policymakers collaborate to pass policies); WAGNER, *supra* note 8, at 61–62 (discussing such a report, listing endangered species, issued by the Fish and Wildlife Service).
22. *See* Heidi Kitrosser, *Scientific Integrity: The Perils and Promise of White House Administration*, 79 FORDHAM L. REV. 2395, 2411 (2011); *see also supra* note 20 and accompanying text.
23. Although it was initially a common-law creation, the deliberative-process privilege is most commonly invoked as an exemption to the Freedom of Information Act, allowing an agency to withhold “inter-agency or intra-agency memorandums or letter which would not be available by law to a party other than an agency in litigation with the agency.” *See* 5 U.S.C. § 552(b)(5) (2012); *see also* Shilpa Narayan, *Proper Assertion of the Deliberative Process Privilege: The Agency Head Requirement*, 77 FORDHAM L. REV. 1183, 1187–1193 (describing the history and development of the deliberative-process privilege).

discussions, outsiders cannot trace the role that politics might play in an analysis that is presented as technical in nature.²⁴

It may seem initially disconcerting to allow for this type of top-down, nontransparent, political control over all aspects of an agency's work, but the overarching logic is sound.²⁵ Since aspects of these technical analyses almost always involve some modicum of policy discretion—and since an agency must speak with one voice and ensure the scientific integrity of its analyses—individual staff should not be allowed to operate with complete independence.²⁶ Misleading technical information could surface in the public sphere before it has been adequately vetted. Rogue agency staff would accordingly enjoy too much power and might confuse and terrify the public. Official agency clearance is thus needed at some level to ensure the integrity of that agency's work.

When carried too far, however, this institutional design can allow for political manipulation of the scientific record in ways that escape detection.²⁷ Indeed even Justice Kagan, who is considered a proponent of presidential control, has urged limits on White House control over an agency's scientific work:²⁸

[T]here is no good reason for a President to displace or ignore purely scientific determinations—as to the kinds of questions, say, on which Congress often instructs agencies to seek opinions from outside advisory committees. The exercise of presidential power in this context would threaten a kind of impartiality and objectivity in decisionmaking that conduces to both the effectiveness and the legitimacy of the administrative process.²⁹

Yet, in administrative law, it is well known that if a technical analysis presents inconvenient results, a political official can and sometimes does make adjustments to the technical record, all under the

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24. See generally WAGNER, *supra* note 8 (discussing examples of the deliberative-process privilege in various science-intensive reviews).
25. See generally Watts, *supra* note 11 (giving examples of presidential control over aspects of agency); Roesler, *supra* note 11 (same).
26. See generally Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 TEX. L. REV. 1601 (2008) (identifying some of the dangers of providing staff too much authority). See also Reilly-Diakun, *supra* note 21, at 213–15.
27. See, e.g., 2 NAT'L TASK FORCE ON RULE OF LAW & DEMOCRACY, *supra* note 20; McGarity & Wagner, *supra* note 10; Wagner, *supra* note 20.
28. Elena Kagan, *Presidential Administration*, 114 HARV. L. REV. 2245, 2356–57 (2001) (urging self-restraint in the White House's reviewing agencies' science-intensive rules); cf. Watts, *supra* note 11, at 728–30 (describing a broader position on presidential control than Kagan, including over agency expertise).
29. Kagan, *supra* note 28, at 2356–57.

cover of executive discretion.³⁰ Unless the agency has in place strong internal processes that prevent these types of interventions into the technical analyses,³¹ there is no limit. Moreover, without internal process and disclosure requirements, it becomes impossible for those outside the agency to judge the integrity and independence of technical analyses that inform the agency's decisions since political officials enjoy an invisible, yet sometimes decisive role in adjusting that work.

It is thus not surprising to learn that, over the decades, political officials have taken advantage of this power when scientific analyses blocked their preferred policies.³² Most of these political intrusions into the scientific record surfaced from individual-agency whistleblowing or anonymous reports of political meddling.³³ Given the high personal stakes involved in whistleblowing, however, it seems likely that political manipulation of agency scientific analyses may be much more frequent than the publicized accounts suggest.³⁴

But more important for understanding the scientific integrity of the agency's expertise, this institutional design places, by necessity, agency scientific staff in a position of subservience to policymakers. The staff's professional independence in analyzing the scientific record is only as strong as the internal agency processes that limit political interventions.³⁵ And, while an agency's scientific-integrity policies help to protect the work of staff scientists, these policies remain both incomplete and effectively unenforceable.³⁶ Regardless of what an agency scientist understands when she enters the federal workforce, if and when there is an internal conflict over what the evidence suggests for policy, the scientific staffer's analysis may play a secondary role and may ultimately be adjusted to better fit the preferred policy. This resolution, moreover, may occur without any public record of the

30. *See supra* notes 11 and 20.

31. *See infra* Part II.

32. *See supra* notes 10 and 20.

33. *See supra* notes 10 and 20.

34. *See, e.g.*, Doremus, *supra* note 26, at 1641–42.

35. President Obama recognized this problem, but did not solve it. *See, e.g.*, Wagner, *supra* note 20, at 2029, 2036–45; *see also* Lisa Heinzerling, *Inside EPA: A Former Insider's Reflections on the Relationship Between the Obama EPA and the Obama White House*, 31 PACE ENVTL. L. REV. 325, 361–65 (2014) (discussing the nontransparent nature of OIRA review).

36. Agency science-integrity policies are useful in providing a process for preventing this type of manipulation, at least facially. As the commentary observes, however, the policies at this point appear to be primarily symbolic. *See, e.g.*, Albert C. Lin, *President Trump's War on Regulatory Science*, 43 HARV. ENVTL. L. REV. 247, 288 (2019); McGarity & Wagner, *supra* note 10, at 1775–78 (discussing the literature on these policies).

respective roles an agency's scientists and political officials played in the final, public decision.³⁷

B. Notice-and-Comment Rulemaking and Judicial Review Can Further Undermine an Agency's Incentives for Producing Scientifically Grounded Rules.

A second feature of administrative law, in theory, should help correct these political manipulations of the scientific record: notice-and-comment rule-making and judicial review.³⁸ The Administrative Procedure Act ("APA") invites any affected party to submit comments on an agency's proposed rule (including the analyses that informs them) and to later sue the agency if a comment is ignored in ways that are "arbitrary and capricious."³⁹ This bottom-up, democratic role of notice-and-comment provides some outer bounds on abuses of administrative discretion with respect to both the competence of the staff analysis, as well as the political manipulation of that analysis. And some courts have been quite comfortable remanding agency rules in cases where they identify irregularities in the supporting technical record.⁴⁰

But this check on political, ends-oriented tinkering with the scientific record proves incomplete for several reasons. First, if the political manipulations are done well, they will be difficult to locate.⁴¹ One would need to replicate the agency's analysis from beginning-to-end, scrutinize each assumption (or incomplete explanation), and even conduct an independent literature search to locate excluded studies.⁴² This process is extremely time-intensive. As a result, unless a stakeholder has ample resources, locating ends-oriented adjustments to an agency's scientific analysis could be difficult, if not impossible.⁴³

37. See *supra* notes 24–24 and accompanying text.

38. 5 U.S.C. § 553(c) (2012).

39. *Id.* § 706.

40. Emily Hammond Meazell, *Super Deference, the Science Obsession, and Judicial Review as Translation of Agency Science*, 109 MICH. L. REV. 733, 738, 778–79 (2011) (extolling the benefits of the judiciary's insistence on reason-giving as applied to agencies' science-intensive rules).

41. See MCGARITY & WAGNER, *supra* note 13, at 60–96; McGarity & Wagner, *supra* note 10, at 1724–69.

42. The same concerns attend to external biasing of scientific research in academia and in the private sector; this is why scientific journals require as prerequisites to publication the comprehensive disclosure of conflicts of interest, sponsor control, and authorship. See, e.g., INT'L COMM. OF MED. J. EDITORS, *supra* note 15.

43. Indeed, even if the resources were available, some of the relevant information needed to recreate the agency's analysis may be unavailable. In the case of pesticides, for example, the unpublished industry studies are not, as a matter of law, allowed to be made publicly available except in very narrow circumstances. See 7 U.S.C. § 136h(g)(1) (2012).

There is also limited time available to do this work. If concerned stakeholders do not file comments raising their technical concerns during the allotted notice-and-comment period, they waive the right to challenge the rule later through litigation.⁴⁴

Second, it remains unclear whether the (remote) risk of getting sued—and losing—is consequential enough to inhibit political manipulations of an agency's supporting technical analysis. At least in one case, where we know that White House officials did in fact alter an agency's scientific record, the court studiously avoided noting that fact in its remand back to the agency.⁴⁵ According to the court, fault lay with the agency, not the chief executive responsible for making the change.⁴⁶ Thus, political officials seem to be off the hook, at least publicly, for the bad publicity that can follow these ends-oriented manipulations. In any event, if the political stakes are high enough, it is not clear that worries about judicial reversals will provide much deterrence.⁴⁷ Particularly if the political goal is to promulgate a less-stringent rule that protects industry, the delay generated by litigation may still be economically beneficial to industry since it postpones the applicable regulatory requirements.⁴⁸ And, more cynically, even if the court blocks the ability of a political official to deliver regulatory relief to a favored constituent, the political official can blame the court and still get credit for trying.

The potential impotency of the APA's capacity for counteracting incentives for political manipulation of technical analyses is disappointing, but the role of the APA in protecting agency expertise turns out to be even more perverse. Since it is costly to participate in notice-and-comment on technical rules,⁴⁹ research shows that, in practice, only industry groups may be able to afford to participate in

44. See *McKart v. United States*, 395 U.S. 185 (1969) (setting out the reasons for first exhausting remedies within the Agency before raising the issue with the court); WENDY WAGNER, *INCOMPREHENSIBLE!: A STUDY OF HOW OUR LEGAL SYSTEM ENCOURAGES INCOMPREHENSIBILITY, WHY IT MATTERS, AND WHAT WE CAN DO ABOUT IT* 184–86 (2019).

45. Wagner, *supra* note 20, at 2039 n.88.

46. *Id.*

47. See, e.g., Nick Parrillo, *The Endgame of Administrative Law: Governmental Disobedience and the Judicial Contempt Power*, 131 HARV. L. REV. 685 (2018); Wendy Wagner, *Revisiting the Impact of Judicial Review on Agency Rulemaking: An Empirical Investigation*, 53 WM. & MARY L. REV. 1717, 1760–66 (2012).

48. Wagner, *supra* note 20, at 1774 n.245 (citing the literature concluding that delays resulting from remands generally benefit industry positions).

49. *Id.*

many of them.⁵⁰ This, in turn, means that only industry groups will be exerting pressure on the quality of the agency's scientific analysis.

One-sided input and review of expert analyses is facially worrisome because even an agency's best experts might develop blind spots if their work is not reviewed by a diverse group of skeptics.⁵¹ But in administrative process, there are several added features that may further compromise the scientific independence and rigor of the agency's technical analysis for a subset of rules. First, some of the agency's analyses may attract a flood of one-sided (and not necessarily reliable or relevant) information during the notice-and-comment process that drains the technical staff's analytical resources and may even compromise the staff's ability to view the evidence in a balanced way.⁵² Under administrative law, it is an agency's responsibility to process and sort through all stakeholder input, no matter how abundant, unhelpful,

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50. Specifically, in a number of empirical studies of environmental and public health rulemakings, in roughly half the rules promulgated by the EPA (and other agencies), only industry groups are participating in notice and comment (and hence in judicial review). See Maureen L. Cropper et al., *The Determinants of Pesticide Regulation: A Statistical Analysis of EPA Decision Making*, 100 J. POL. ECON. 175, 178, 187 (1992) (examining pesticide registrations between 1975 and 1989 and finding that environmentalists participated in 49% of the cancellations); Marissa Martino Golden, *Interest Groups in the Rule-Making Process: Who Participates? Whose Voices Get Heard?*, 8 J. PUB. ADMIN. RES. & THEORY 245, 253-54 (1998) (studying eight rules promulgated by the EPA and the NHTSA, and determining via content analysis who participates and influences federal regulations and finding no citizen engagement in five of the eight rules); see also Jason W. Yackee & Susan W. Yackee, *A Bias toward Business? Assessing Interest Group Influence on the Bureaucracy*, 68 J. POL. 128, 131, 133 (2006) (studying forty lower-salience rulemakings promulgated by four different federal agencies and finding that business interests submitted 57% of comments; whereas nonbusiness or nongovernmental organizations submitted 22% of comments, 6% of which came from public interest groups); Wendy Wagner et al., *Rulemaking in the Shade: An Empirical Study of EPA's Air Toxic Emission Standards*, 63 ADMIN. L. REV. 99, 128 (2011) (discovering that public interest groups participated in notice and comment for less than half (48%) of the rules setting emission standards for hazardous air pollutants from major categories of industry); Cary Coglianese, *Challenging the Rules: Litigation and Bargaining in the Administrative Process* 73 tbl.2-2 (1994) (unpublished Ph.D. dissertation, University of Michigan) (finding that businesses participated in 96% of rules and that national environmental groups participated in 44%), available at <https://deepblue.lib.umich.edu/handle/2027.42/129432> [<https://perma.cc/RC5J-ML47>].
51. See, e.g., HELEN E. LONGINO, SCIENCE AS SOCIAL KNOWLEDGE: VALUES AND OBJECTIVITY IN SCIENTIFIC INQUIRY 80 (1990) (underscoring the role of critical and diverse scrutiny in science).
52. *Id.*

or unreliable.⁵³ Regulated industries, which often have very high stakes in advancing their positions, may take full advantage of this opportunity to monopolize an agency's attention.

Exacerbating the skewed, information-input problem is the selective, technical "peer" review that occurs as a result of a one-sided notice-and-comment process. In the majority of rules in which industry groups are the sole participants, the primary and possibly the only public scrutiny to an agency's analyses comes from the regulated sector.⁵⁴ Moreover, under administrative law, there is no adverse consequence for commenters who provide ends-oriented technical comments or even scientifically misleading or dishonest comments.⁵⁵ Again, it is the agency's job to process all of the scientific criticism, no matter how misdirected or factually inaccurate.⁵⁶

Further magnifying the influence of industry-dominated comments on the agency's analysis is the fact that the risk of subsequent legal challenges will come largely, if not exclusively, from this same sector.⁵⁷ Under the courts' interpretation of the APA, an agency cannot be sued unless the litigant's concern was raised with specificity during the comment period.⁵⁸ If the critical comment was not entered into the record, then the agency need not anticipate or second guess that concern. Groups who are absent from the notice-and-comment process will thus be foreclosed from litigating an agency's decision—for example one that defers uncritically to the industry's analysis—unless there is offsetting information somewhere else in the administrative record.⁵⁹

Yet there is one last perverse incentive that can emerge from the notice-and-comment process that could further undercut the integrity of an agency's independent technical analysis. According to the courts' "logical outgrowth" test, if an agency alters its analysis or rule in significant ways as a result of the comments received, it must start the

53. WAGNER, *supra* note 44, at 186–87.

54. As discussed below in Part II, the use of external scientific peer review could help buffer the agency's analysis against this one-sided assault. But currently, scientific peer review is not a process that is codified, much less specified in detail, within administrative process. Instead, peer review remains malleable in its implementation and, in the worst case, can and has been used by political officials in ends-oriented ways. *See infra* notes 70–75 and accompanying text.

55. WAGNER, *supra* note 44, at 184.

56. *Id.*

57. *See generally* Gabriel H. Markoff, *The Invisible Barrier: Issue Exhaustion as a Threat to Pluralism in Administrative Rulemaking*, 90 TEX. L. REV. 1065 (2012).

58. *Id.* at 1078.

59. *Id.* at 1084–85.

notice-and-comment process over.⁶⁰ This test—at least at the EPA—sometimes motivates an agency to attempt to pre-emptively negotiate the proposed rule with high-stakes regulated parties.⁶¹ Although there is no clear evidence that in these negotiations the technical analyses are compromised or adjusted in ways that are not balanced, this risk seems at least possible. To avoid having a rule caught up in decades of legal challenges, the safest course for an agency is to reach some consensus before the rule goes through the APA's notice-and-comment process. As one EPA staff member remarked with respect to industry participants, “[w]e help them; they help us.”⁶²

Cumulatively, each of these APA-generated incentives to drift from what might initially involve a more straight-lined, objective analysis of the scientific record occurs not *despite* administrative law, but *because* of it. Of course, this is not always the case. If the interest-group pressures are adversarial and somewhat balanced, an agency may be more inclined to hew to the most neutral interpretation of the record since opponents will catch and challenge deviations.⁶³ But when opponents are missing from the rulemaking process, and the machine-gun fire comes only from regulated industry, an agency may find it necessary to deviate from a straight-and-narrow interpretation of the applicable science.

60. See, e.g., *Shell Oil Co. v. EPA*, 950 F.2d 741, 750–51 (D.C. Cir. 1991).

61. See, e.g., William F. West, *Formal Procedures, Informal Processes, Accountability, and Responsiveness in Bureaucratic Policy Making: An Institutional Policy Analysis*, 64 PUB. ADMIN. REV. 66, 74 (2004); see also *Nat. Res. Def. Council v. EPA*, 595 F. Supp. 1255, 1262 (S.D.N.Y. 1984) (“I agree that the negotiated programs without rulemaking cannot be sanctioned under TSCA, though negotiation [solely with industry] to determine appropriate test protocols as well as other relevant criteria certainly is not only permissible but indeed preferable to blind, often impractical, bureaucratic blundering”).

62. Coglianese, *supra* note 50, at 14.

63. See *infra* Part II. It is important to reiterate that in other rule settings where all affected groups and their experts are pouring over the agency's analysis, the administrative process appears to markedly improve the quality of the agency's expert analysis by forcing out more explicit reasoning and balanced considerations. William T. Gormley, Jr., *Regulatory Issue Networks in a Federal System*, 18 POLITY 595, 607–08 (1986). Indeed, it is from this “adversarial” quadrant that the success stories in the EPA's expert analyses in the NAAQS process are drawn. See *infra* Part II. Thus it is possible that the administrative process exerts a bipolar set of incentives on the agency for excellent expertise. In cases where the stakeholders are diverse, the incentives are positive; in settings where the stakeholders are aggressive and monolithic, the incentives can be perverse. Since the focus here is on the systematic protection of agency expertise, the negative impacts of the APA on this expertise are of primary interest.

C. *Staffing the Expert Bureaucracy Is also Subject to Political Control*

An agency's expertise is only as good as the quality of its scientific staff.⁶⁴ But the management, hiring, and firing of technical staff is in control of political appointees and their staff, who sometimes make these decisions in a political, ends-oriented fashion.⁶⁵

Although there are obvious justifications for political control over the management of an agency's technical staff such as the EPA, the implications of complete control are problematic in ensuring rigorous, independent expert staff.⁶⁶ A political administrator eager to gain control over her agency's scientific decisions need only look to budgets, retention policies, and organizational charts to gut the agency's independent expertise. As Gillian Metzger observes, "from the proposition that delegated power must be faithfully executed, . . . massively underfunding the EPA without altering its statutory responsibilities or repealing environmental rules . . . begin[s] to look constitutionally suspect."⁶⁷

Not surprisingly, when Presidents have been hostile to the independent judgments of agency experts that could impede their preferred policies, those agencies' political officials have in fact used budgets and hiring and retention policies to exert some indirect control over the technical staff.⁶⁸ Moreover, when deployed in ends-oriented ways, these techniques appear to be at least partly effective in controlling the scientific advice that the technical staff can offer on various regulatory issues.⁶⁹

Political control over the staffing of an agency's experts does not stop with its own full-time employees, but such control also extends to the creation and composition of science advisory boards assembled to peer review the agency's technical analysis.⁷⁰ In principle, these scientific advisory boards must be "balanced,"⁷¹ and there is a cultural norm that they also be staffed with respected, mainstream scientists

64. *See supra* note 17 and accompanying text.

65. *See, e.g.*, RENA I. STEINZOR, MOTHER EARTH AND UNCLE SAM: HOW POLLUTION AND HOLLOW GOVERNMENT HURT OUR KIDS 50–53 (2008) (describing this problem at the EPA); *see also* McGarity & Wagner, *supra* note 10, at 1747–56; Plumer & Davenport, *supra* note 10.

66. *See supra* note 17 and accompanying text (stressing the need for independent control over hiring and budget).

67. Metzger, *supra* note 3, at 90.

68. *See supra* note 63.

69. *Id.*

70. *See, e.g.*, Robert Steinbrook, *Science, Politics, and Federal Advisory Committees*, 350 NEW ENG. J. MED. 1454, 1456 (2004) (criticizing the George W. Bush administration for stacking science advisory committees).

71. *Id.* at 1457.

who will provide somewhat representative views of the diverse scientific community.⁷² Yet in practice, there is no legal prohibition against the overt stacking of the boards for the purpose of achieving an agency's political, rather than scientific, goals.⁷³ In many settings, the boards also are funded by and engage only at the whim of the political administrator.⁷⁴ So, if the scientific advisory boards cannot be stacked easily with biased members, they can be discontinued instead.⁷⁵ The political control of science advisors is a complex topic, but whatever the ultimate conclusions, there can be no question that this political control is also well positioned to compromise the independence and objectivity of the technical assessments emerging from agencies.

II. EXPERT INNOVATIONS AT THE EPA

Although the EPA was created in part to serve as the nation's environmental expert, it has not been given the needed institutional support for that assignment. Instead, existing legal controls tend to undermine the Agency's ability to provide independent, objective advice and technical analyses on environmental issues.

Yet even with the institutional odds stacked against it, the EPA has sometimes (though certainly not always) emerged as a formidable expert.⁷⁶ In this section, I detail some of the innovations the EPA has introduced through the National Ambient Air Quality Standard (NAAQS) program to provide needed expertise, while insulating that expertise as much as possible from excessive political and stakeholder influence.⁷⁷ These internal processes may even fall into the category of

72. Federal Advisory Committee Act, 5 U.S.C. app. at 492–93 (2012).

73. *See, e.g.*, Steinbrook, *supra* note 70, at 1459; *cf.* Brian D. Feinstein & Daniel J. Hemel, *Outside Advisers Inside Agencies*, 108 GEO. L.J. 1139 (2020) (noting the political valence of advisory boards and arguing, normatively, that it is a positive development because it increases political control over agency decisions).

74. *See, e.g.*, McGarity & Wagner, *supra* note 10, at 1763–65.

75. *Id.*

76. Because there is little work done in attempting to root through the deep recesses of agency decisions to assess in a grounded way some practices in how agencies use science, I was fortunate enough to be commissioned by ACUS to do exactly that. In the course of a study of three agencies and nearly a half-dozen discrete regulatory programs, I—largely by chance—stumbled upon some exciting procedures that the EPA (particularly in the NAAQS program) instituted to provide high-quality expert analysis on the existing literature, while remaining attentive to the inevitable discretion it sometimes requires that involve policy choices.

77. This part draws heavily from WAGNER, *supra* note 8.

“internal law” defined by Kevin Stack and Gillian Metzger since they structure the Agency’s internal decision process in significant ways.⁷⁸

Before delving into the details, there are two important lessons to spotlight at the outset arising from this grounded study of the NAAQS innovations. The first—which appears to run against the conventional wisdom⁷⁹—is that, practically, science and policy *can* be separated in ways that help to enhance the accountability of both.⁸⁰ In its famous Red Book, the National Academies of Science underscores the critical import of separating the technical assessment from the political decision-making as an institutional matter,⁸¹ even though that report is often cited (incorrectly) for the opposite proposition.⁸² Bifurcating these steps is based on the very real concern that until the expert contributions are isolated and made transparent, there is no assurance that high-quality scientific analysis has occurred within the agency. The agency staff’s technical analysis must still incorporate non-scientific assumptions and judgments to fill in the many uncertainties and gaps in science. Yet by clearly identifying and explaining these assumptions in the course of the analysis, the experts are able to avoid over-reaching with hidden policy choices. Clear explication of the limits of the scientific research by the experts thus helps sharpen the “blurred” lines between science and policy.⁸³

A second lesson is that the best way to understand the role of agency experts is to conduct in-depth studies of what is actually occurring within the agencies as science moves through these regulatory processes.⁸⁴ Agencies have been engaged in trial-and-error with respect

78. Gillian E. Metzger & Kevin Stack, *Internal Administrative Law*, 115 MICH. L. REV. 1239, 1244 (2017).

79. See, e.g., Watts, *supra* note 10, at 728–30; Roesler, *supra* note 10, at 526.

80. See, e.g., McGarity & Wagner, *supra* note 9, at 1787–89 (citing the literature); Reilly-Diakun, *supra* note 20, at 220–25.

81. COMM. ON THE INSTITUTIONAL MEANS FOR ASSESSMENT OF RISKS TO PUB. HEALTH, NAT’L RES. COUNCIL, RISK ASSESSMENT IN THE FEDERAL GOVERNMENT: MANAGING THE PROCESS 2–3, 148 (1983).

82. *Id.* at 148.

83. See, e.g., Reilly-Diakun, *supra* note 21, at 221–22. Susan Dudley and Marcus Peacock, for example, raise concerns about expert staff over-reaching by making policy-based assumptions to fill the many gaps in information. Susan E. Dudley & Marcus Peacock, *Improving Regulatory Science: A Case Study of the National Ambient Air Quality Standards*, 24 SUP. CT. ECON. REV. 49 (2016). Yet these author’s solutions involve advocating greater explication of these assumptions, rather than the wholesale elimination of expertise. See *id.*

84. By contrast, efforts to re-create underlying black-boxed agency processes by extracting a few snapshots from decided court cases risks is likely to offer an incomplete understanding, at best, of an agency’s use of science. The litigation of agency rules is not random but selective, and thus this

to providing scientific advice for over half a century.⁸⁵ There is thus a great deal of experience to be mined that will not only provide useful institutional-design lessons, but will offer insights to our theoretical understanding of regulatory science.

With these two general lessons out of the way, we can now examine several of the EPA's innovations in bureaucratic expertise offered by the NAAQS process. Under the Clean Air Act,⁸⁶ the EPA is required to set national ambient air-quality standards (the NAAQS) for a few, pervasive air pollutants in order to “protect the public health” with “an adequate margin of safety.”⁸⁷ While this standard-setting task has substantial social implications, Congress grounds the exercise heavily in scientific research.⁸⁸ To keep up with the latest science, the EPA is statutorily required to review each NAAQS every five years.⁸⁹

The resulting ambient-pollution standards are not simply aspirational, but mandatory; all parts of the country must be in compliance with these standards or face costly consequences.⁹⁰ As a result of their national importance, political and public interest in these science-intensive standards is generally high,⁹¹ at least as compared to the EPA's other science-intensive decisions. On the public-health side, national standards that are set proactively can save thousands of lives and tens of millions of dollars annually in health impacts since air pollution is still a major culprit in causing a variety of health ailments,

litigation is unlikely to be representative of the larger universe of agency expertise in rulemakings. *See, e.g.*, McGarity & Wagner, *supra* note 10, at 1745–49 (noting that in the EPA's air toxic program only 8% of the rules were challenged, and in all but one of these cases, the public-interest groups brought suit). Additionally, and still more problematic, because the Department of Justice represents the Agency in court, the litigation will offer a “cleared” government explanation of the underlying agency expert processes which may be misleading and self-serving. For this and other reasons, using litigation as the primary empirical probe into understanding agency behavior needs to be used carefully and with multiple caveats.

85. *Id.*

86. 42 U.S.C. § 7401 (2012).

87. *Id.* § 7409(b)(1).

88. *See Whitman v. Am. Trucking Ass'ns., Inc.*, 531 U.S. 457, 464–65 (2001).

89. 42 U.S.C. § 7409(d)(1) (2012).

90. *See, e.g., id.* § 7506(c).

91. *See, e.g.*, Jason West & Yang Oi, *Air Pollution: How Smarter Policy Could Lead to Cleaner Air*, NAT'L INTEREST (Feb. 23, 2020), <https://nationalinterest.org/blog/buzz/air-pollution-how-smarter-policy-could-lead-cleaner-air-125936> [<https://perma.cc/L833-VCHW>].

not to mention agricultural and environmental damage.⁹² On the industry side, every increment downwards in setting protective NAAQS raises the costs—sometimes exponentially—of compliance.⁹³ Regulated parties (e.g., coal and gas industries) facing the highest compliance costs will be eager to ensure that the NAAQS are set as permissively as possible. What is more, entire transportation systems, the ability to rely on coal for energy, and a host of other major economic decisions are directly impacted by the selection of these quantitative ambient standards.⁹⁴ And states, which must implement the standards through elaborate plans and their own legal requirements, often take a keen interest in the national standards, particularly when their own locality is likely to be out of compliance with a proposed standard.⁹⁵

Thus, when the EPA embarks on its mandated, five-year review of each of the existing NAAQS, nearly everyone takes an interest. The fact that the issues are technical, the studies numerous, and the models and analyses inherently complicated does not insulate this particular expert rulemaking from diverse scrutiny and political controversy.⁹⁶

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92. See, e.g., EPA, BENEFITS AND COSTS OF THE CLEAN AIR ACT 1990–2020, THE SECOND PROSPECTIVE STUDY (2011), available at <https://www.epa.gov/clean-air-act-overview/benefits-and-costs-clean-air-act-1990-2020-second-prospective-study> [<https://perma.cc/9SJY-4ZHS>].
93. See, e.g., EPA, SUMMARY OF THE UPDATED REGULATORY IMPACT ANALYSIS (RIA) FOR THE RECONSIDERATION OF THE 2008 OZONE NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) S1–4 (2009) (indicating a range of between about \$7.6 billion and \$25 billion in costs annually between an ozone standard of 0.070 ppm versus 0.075 ppm), available at https://www3.epa.gov/ttnecas1/regdata/RIAs/s1-supplemental_analysis_summary11-5-09.pdf [<https://perma.cc/NWS4-L7XP>].
94. See *Overview of Air Pollution from Transportation*, EPA, <https://www.epa.gov/transportation-air-pollution-and-climate-change/learn-about-air-pollution-transportation> [<https://perma.cc/MBV4-AEKL>] (last updated May 31, 2018).
95. See William Boyd, *The Clean Air Act's National Ambient Air Quality Standards: A Case Study of Durability and Flexibility in Program Design and Implementation*, in LESSONS FROM THE CLEAN AIR ACT 15 (Ann Carlson & Dallas Burtraw eds., 2019).
96. See, e.g., John M. Broder, *Obama Abandons a Stricter Limit on Air Pollution*, N.Y. TIMES (Sept. 2, 2011), <https://www.nytimes.com/2011/09/03/science/earth/03air.html> [<https://perma.cc/7HVR-GN4L>] (describing President Obama's decision to reject a more stringent ozone standard despite strong scientific evidence, including the Clean Air Science Advisory Committee's (CASAC) endorsement in its favor); *Clinton Oks Tough Clean Air Standards: Congress has Power to Overturn New Rules*, CLEVELAND PLAIN DEALER, June 26, 1997, at A1 (describing President Clinton's controversial decision to back the EPA's more stringent ozone standard). Vice President Gore was even dubbed the "Ozone Man" by President George H.W. Bush during the campaign season due to Gore's advocacy of strong air-quality rules. 'Ozone Man', BALTIMORE SUN (Oct.

During the first several decades of the NAAQS program, the EPA's coping device for surviving this fierce scrutiny was to produce ever more encyclopedic background documents supporting its proposed revised standards.⁹⁷ Although not intentionally unwieldy, the EPA's comprehensive review of the literature erred on the side of over-inclusive analysis precisely to protect against criticism. Yet, since Congress had also mandated that these periodic reassessments of each of the NAAQS occur once every five years, the EPA's exhaustive approach fell well outside the timeline and the EPA was continuously operating in violation of court-ordered deadlines.⁹⁸

Caught between a rock and a hard place, the Agency revisited its approach for purely utilitarian reasons.⁹⁹ It needed to devise a process that would improve its accountability—particularly to the public—improve its record in court, and provide some insulation from attacks by the White House and other political officials. Thus, the NAAQS process was reinvented not so much to protect the agency's expertise, but to advance the pragmatic goal of enabling standards to be promulgated more expeditiously.¹⁰⁰ And yet, conveniently, as it turns out, in order to survive the firestorm coming at it from all sides, the Agency also found it had no choice but to elevate excellence in expertise above all else. Even political officials appreciated that the only way through the adversarial obstacle course of legal and political controversy was to develop these rulemakings using an impeccable, science-styled process.¹⁰¹

The revised NAAQS process now showcases a number of innovations in structuring expert bureaucratic processes. None of these features is perfect, and few stakeholders will be happy with every aspect of them. As a conceptual matter, however, the innovations make great strides over the status quo described in Part I. The most noteworthy best practices include:

1. **Incremental Technical Assessments and Reports that Inform (but Do Not Determine) the Regulatory Standard.** The first, and perhaps most, important element of the EPA's process is the publication of a series of

14, 2007), <https://www.baltimoresun.com/news/bs-xpm-2007-10-14-0710140148-story.html> [<https://perma.cc/4YHA-C7QP>].

97. NAAQS PROCESS REVIEW WORKGROUP, REVIEW OF THE PROCESS FOR SETTING NATIONAL AMBIENT AIR QUALITY STANDARDS 3-5 (2006), available at https://www3.epa.gov/ttn/naaqs/pdfs/naaqs_process_report_march2006.pdf [<https://perma.cc/5SSJ-6XBN>].

98. *Id.* at E-1, 5.

99. See WAGNER, *supra* note 8, at 30.

100. See *supra* notes 1-5 and accompanying text.

101. See WAGNER, *supra* note 44, at 193.

incremental, technical reports¹⁰² authored and edited by the EPA's scientific staff.¹⁰³ This expert analytical work begins after an initial public "scoping" session, which frames the relevant questions for the experts. Political officials, stakeholders, the public, and others all take part in this scoping exercise.¹⁰⁴ Based on input from the full range of interested participants, including political officials, the EPA's staff then prepares a final "scoping report" which sets out the written charges that guide the subsequent technical analyses.¹⁰⁵ This scoping report is also published for notice and comment.

After the scoping report is finalized, the EPA's technical staff produce a series of reports that explore and analyze how the existing literature informs these policy-framed questions.¹⁰⁶ The first of these reports provides a review of the relevant scientific literature bearing on the questions.¹⁰⁷ The second report integrates that literature into alternative models.¹⁰⁸ The final technical report presents all the previous findings in a way that policymakers can understand, including explicating the unknowns and uncertainties.¹⁰⁹ Only after the technical documents are completed does the Agency convene an inter-agency team (including lawyers and political officials) to write the proposed rule that is informed, but not determined by this analytical work.¹¹⁰

2. **Firewalls.** To ensure these preliminary technical reports are as rigorous as possible, they are written by scientific staff who are "firewalled" from political officials.¹¹¹ While political staff can converse with the technical units, they are expected to do so on the record in ways that are subject to FOIA.¹¹² Although this firewall is not a written procedural requirement, the scientific staff at the EPA insist that it

102. WAGNER, *supra* note 8, at 32–34.

103. *Id.* at 39–40.

104. *Id.* at 32.

105. *Id.*

106. *Id.* at 33–34.

107. This is called the "integrated scientific assessment report." *Id.* at 33.

108. This is called the "risk/exposure assessment report." *Id.* at 33–34.

109. This is called the "policy assessment report." *Id.* at 34.

110. *Id.* at 35.

111. *See id.* at 36.

112. *Id.*

operates like an established norm that insulates their work.¹¹³ It provides benefits not only in separating the technical assessment from political control, but also heightening the transparency of the expert deliberations in ways that deliberative process protections might otherwise obscure.¹¹⁴

3. **Attribution.** To provide incentives for excellence in analysis and even peer review, all scientific authors of each report, as well as individual peer reviewers, are given attribution.¹¹⁵ Agency staffers who help prepare a chapter or review a section are identified by name.¹¹⁶ These staff members' professional reputations are thus tied to the quality of the draft or final version of the document.¹¹⁷ The scientific journals underscore the vital role that disclosures of attribution and authorship play in enhancing scientific integrity.¹¹⁸ In its NAAQS program, the EPA borrows these conventions and introduces them into its own process to both enhance scientific accountability and to provide reputation-based incentives for the EPA's scientific staff.
4. **Rigorous Peer Review.** Each of the reports in the series are subjected to internal peer review—and sometimes external review by individual experts¹¹⁹—and the reports are then reviewed by the Clean Air Science Advisory Committee (CASAC), a scientific peer-review committee established by statute.¹²⁰ The Clean Air Act explicitly identifies the disciplines of each member of the CASAC,¹²¹ although, as discussed earlier, there is political discretion in the actual selection of scientists that has sometimes been abused.¹²² But

113. *Id.*

114. *Id.* at 116.

115. *Id.* at 36, 52–53.

116. *Id.*

117. *Id.*

118. See, e.g., *Defining the Role of Authors and Contributors*, INT'L COMMITTEE OF MED. J. EDITORS, [http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html#:~:text=\[https://perma.cc/E8BZ-N7YG\]](http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html#:~:text=[https://perma.cc/E8BZ-N7YG]) (“Authorship confers credit and has important academic, social, and financial implications.”) (last visited June 7, 2020).

119. WAGNER, *supra* note 8, at 33–34.

120. *Id.* at 30, 33–34.

121. 42 U.S.C. § 7409(d)(2)(A) (2012).

122. See, e.g., Sean Reilly, *Documents Expose Ties Among EPA Panel's Experts*, E&E NEWS (Feb. 7, 2020), <https://www.eenews.net/stories/1062289617> [<https://perma.cc/VX4L-X8MW>].

generally, over the last four decades, the CASAC has been comprised of the nation's top outside experts and it rigorously scrutinizes each of the EPA's technical reports.¹²³ It is not atypical for the CASAC to go through two rounds of peer review for each report, with each round of comments running dozens of pages.¹²⁴ In revising the report based on this peer review, the EPA traditionally explains in considerable detail how it responded to each of the CASAC's comments.¹²⁵ And the CASAC gets a final opportunity for response after each of the EPA's draft reports is revised.¹²⁶ In this way, the quality of the Agency's technical analyses is improved by deploying multiple, intensive mechanisms for scientific peer review. All of this peer review is publicly available.¹²⁷ While there is still considerable room for improvement in institutionalizing this external scientific peer review—particularly with respect to selecting high quality scientists to serve as reviewers and ensuring they understand their limited role¹²⁸—this step in the process marks the fundamental importance of diverse, expert peer review of agency technical analyses.

- 5. Continuous Public Review.** A draft of each of the three technical reports, as well as the scoping report, is also subject to notice and comment by the public.¹²⁹ The White House and other agencies can offer their comments as well, but their input goes on the record.¹³⁰ If the White House is concerned about undisclosed discretionary judgments buried in the

123. *See, e.g.*, EPA, SAFEGUARDING THE FUTURE: CREDIBLE SCIENCE, CREDIBLE DECISIONS 38 (1992) (noting the positive effect of CASAC on EPA's decisions); MARK R. POWELL, SCIENCE AT EPA: INFORMATION IN THE REGULATORY PROCESS 43 (1999) (reporting on how persons interviewed for the study on science at the EPA "gave SAB and CASAC credit for improving EPA's acquisition and use of science").

124. *See, e.g.*, WAGNER, *supra* note 8, at 34.

125. *Id.* at 38.

126. *Id.* at 34; *see also id.* at 127 (discussing role of CASAC in declaring closure on technical disputes).

127. *See id.* at 113–15.

128. *See, e.g.*, Dudley & Peacock, *supra* note 83, at 82, 83 (arguing that CASAC in particular would benefit from clearer instructions about the scope of their review responsibilities).

129. WAGNER, *supra* note 8, at 37, 38.

130. *Id.* at 35.

analysis or technical lapses of judgment, for example, the political officials are free to raise these concerns.¹³¹

As noted at the outset, these technical reports prepared by scientific staff during the NAAQS process do not endeavor to select a proposed air-quality standard; they simply provide a consensus-based summary of the relevant scientific literature that responds to policy-based questions regarding the state of the relevant science.

The selection of a proposed (and, ultimately, final) standard begins only after the technical reports are completed. These subsequent rulemaking deliberations are interdisciplinary, they can be quite political, and they often involve other agencies and White House offices.¹³² Ultimately, if the EPA's Administrator decides to ignore the technical report's findings and selects a standard outside the "plausible" range identified in these reports, it is his or her prerogative to do so.¹³³ But, unlike many other agencies' science-intensive programs, the EPA's NAAQS process is unique because it has made public the underlying, separate expert analysis.¹³⁴ Thus, political officials cannot hide their decisions to deviate from scientific recommendations by altering the terms of the technical analysis itself and claiming that the "science made me do it."

It is also important to point out that the innovations just described are not the brainchild of a political official, but came from a team of the EPA's scientific staff charged with reconfiguring the NAAQS process (under George W. Bush's administration).¹³⁵ Faced with a mandate to design a better-working, more expedient process for integrating scientific information into policy,¹³⁶ the EPA's staff developed this revised NAAQS process. These high-level career staffers were presumably aware that the Agency's reputation, as well as their

131. Dudley and Peacock take issue with some of the technical assumptions that are endemic in the technical reports, like assuming causation for correlations in epidemiological studies or adopting a default, linear-dose response curve when the data is limited. Dudley & Peacock, *supra* note 83, at 63, 64. These are precisely the kinds of issues and sources of disagreements that could (and likely are) raised in notice and comment on each of the technical reports. Indeed, if there are plausible alternative assumptions not disclosed by the staff in the technical report that make a material difference to the recommendations, this lapse would be a valid reason for a political appointee or interagency team to give less weight to the technical report in their decision-making.

132. *Id.* at 74.

133. *Id.*

134. WAGNER, *supra* note 8, at 34.

135. *See, e.g.*, NAAQS PROCESS REVIEW WORKGROUP, *supra* note 97, at 2, 3.

136. *Id.* at 1.

own professional reputations, turn on the quality of their expertise.¹³⁷ Political pressure on the Agency from diverse stakeholders only serves to further elevate these staff incentives for excellence, since the Agency's technical work will be flyspecked by diverse critics. In some settings, excellence in expertise may thus become a survival tool for an agency.

III. THE PATH TO MORE CONSISTENT BUREAUCRATIC EXPERTISE

There are several lessons about agency expertise to be drawn from the EPA's NAAQS process. First, and perhaps most significant, the procedural innovations underscore how expert agencies can sometimes manage to persevere and strengthen the integrity of their scientific contributions despite, and not because of, poorly designed legal requirements. They also provide a testament to the high hopes for civic bureaucracies and what they can accomplish.¹³⁸

Moreover, in the NAAQS program, the Agency's success in bringing rigorous scientific expertise to bear—in a way that stands up to academic scientific peer review, public comment, and judicial review—is attributable in large part to its career scientific staff.¹³⁹ Although studies of the role of the civil service in bureaucracies are rare, what we do know is that under the right conditions, agency staff can behave in ways that are professional and rise above personal ideologies.¹⁴⁰ There is thus reason to be optimistic that, when the bureaucratic structure is constructed properly (both in terms of staff incentives and minimizing external constraints), agencies can bring the very best science to their decision making.

Second, it follows that if we want excellent agency experts, we may need to look no further than some of the programs and staff already in

137. This was a consistent theme in all of my interviews with the EPA staff. *See generally* WAGNER, *supra* note 8. *See also* DANIEL CARPENTER, REPUTATION AND POWER: ORGANIZATIONAL IMAGE AND PHARMACEUTICAL REGULATION AT THE FDA 299–300 (2010).

138. *See, e.g.*, B. DAN WOOD & RICHARD W. WATERMAN, BUREAUCRATIC DYNAMICS: THE ROLE OF BUREAUCRACY IN A DEMOCRACY 126 (1994) (“It is healthy for bureaucracy to use its information advantages to better inform principals on either policy matters or the nature of the bureaucratic process . . .”); Colin Scott, *Accountability in the Regulatory State*, 27 J.L. & SOC'Y 38, 55 (2000) (touting the importance of checks and balances in which “opposed maximizers” hold one another in check).

139. *See supra* note 137 and accompanying text.

140. *See, e.g.*, JOHN BREHM AND SCOTT GATES, WORKING, SHIRKING, AND SABOTAGE: BUREAUCRATIC RESPONSE TO A DEMOCRATIC PUBLIC 79–81 (1999); Marissa Martino Golden, *What Motivates Bureaucrats? Politics and Administration During the Reagan Years* 106–07 (2000).

place. Rather than reinvent the wheel through executive or legislative action, we should focus initially on locating models of agency expertise emerging organically from within the EPA and other agencies.¹⁴¹ Indeed, since these programs are not designed with a clear political end in mind, they provide a more reliable template for incorporating scientific expertise into an agency's decisions than those designed by members of Congress or the White House.¹⁴² Providing agencies like the EPA with autonomy in determining how best to provide expert advice, coupled with proper high-level incentives to be excellent, may be all that is needed to nurture agency expertise.

Finally, these high hopes for stronger expert agencies come with a distinct and critical catch. The success story of the NAAQS may have come about in part because of the unique circumstances of EPA's regulatory environment. In the NAAQS program, EPA operates under intensive political and stakeholder pressures that put great weight on scientific evidence. Every move the Agency makes in its decision process is put under scrutiny. In settings where this kind of adversarial pressure cannot be brought to bear, agency processes may need to be designed to follow and enforce this process without relying on stakeholder oversight.¹⁴³ Indeed, such an expert-based process will need to anticipate and withstand the frequent one-sided stakeholder pressures and accompanying interventions by the political branch that seek to knock the expert analysis off course. This type of structured expert process may also need to be more explicit within an agency program, operating as written "internal law" that guides agency actions across rulemakings.¹⁴⁴ Without a process that nurtures and protects scientific expertise, existing procedural requirements may operate in some settings to undermine the integrity of expert advice.

CONCLUSION

Any fiftieth birthday should involve some celebration of a half-century of accomplishments, and the EPA's birthday is no exception. The EPA has managed to not only provide excellent expert advice for

141. The NAAQS process is not the only program where some of these innovations occur, and EPA is not the only agency doing innovative work to nurture and enhance its ability to provide expertise. *See, e.g.*, WAGNER, *supra* note 8, at 108–10.

142. *See, e.g.*, Wendy Wagner et al., *Whose Science? A New Era in Regulatory Science Wars*, 362 *SCIENCE* 636, 636–39 (2018) (tracing the political motives lying behind some regulatory reform initiatives).

143. *See, e.g.*, Wagner, *supra* note 44, at 193–203 (considering reforms for these lopsided stakeholder rulemaking environments).

144. *See, e.g.*, McGarity & Wagner, *supra* note 10, at 1792–1800 (proposing analogous reform and explaining why it may need to be legislatively codified, at least in part); Reilly-Diakun, *supra* note 21, at 220–29.

one of its most important regulatory programs, but in doing so, it has developed a blueprint that could serve as a model for other programs within the EPA, in other federal agencies, and for expert bodies across the globe. It is now up to the rest of us to follow the Agency's lead.