

Chocolate Without the Bitter Aftertaste

SEPTEMBER/OCTOBER 2025

# Environmental Forum<sup>®</sup>

Advancing Environmental Protection Through Analysis | Opinion | Debate



## The Shadow Rule

**AI**

*Environmental Pros  
and Cons of New Tech*

**SCOTUS**

*What Replaces Deference  
to Federal Agencies?*

**H<sub>2</sub>**

*Green Hydrogen Enters  
the Clean Energy Debate*



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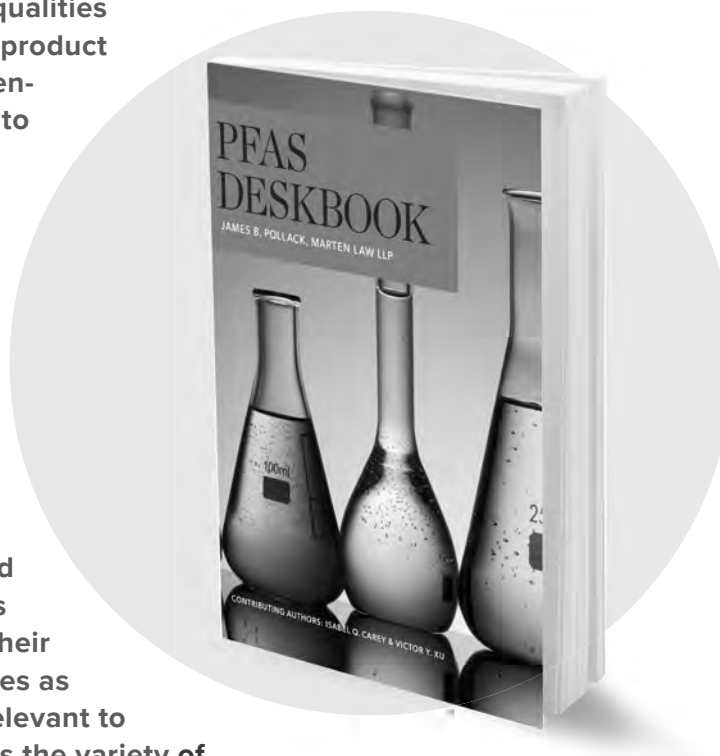
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# PFAS DESKBOOK

From cookware to dental floss to stain-resistant fabrics, PFAS, or per- and polyfluoroalkyl substances, pervade modern life. PFAS are a family of thousands of synthetic chemicals that have a variety of unique qualities that make them useful in industrial and consumer product applications. Unfortunately, there is a growing scientific recognition that many PFAS come with a cost to public health and the environment. While federal and state action is just beginning for PFAS and the regulatory landscape is changing quickly, the toxicity of many PFAS has been well-established.

The *PFAS Deskbook* offers readers a comprehensive, nonpartisan, objective overview of the PFAS journey from their inception to today. It begins with the historical and scientific background of PFAS to help readers better understand the pervasive nature of these so-called “forever chemicals.” Subsequent chapters are then laid out to largely follow the path of PFAS chemicals as they move through the supply chain. It examines their creation, import, and initial use in industrial facilities as well as the statutory and regulatory frameworks relevant to consumer products. The Deskbook further explores the variety of federal and state statutes that can apply to contaminated soils, air, and water after PFAS have entered our environment, including PFAS contamination and cleanup, making the book a must-have resource for today’s environmental practitioners.



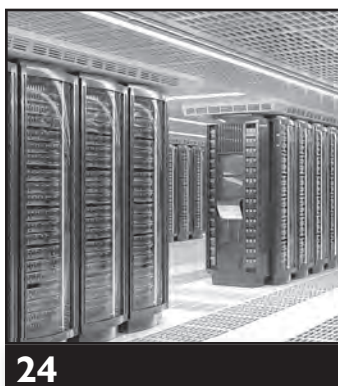
*About the Authors: Lead author James B. Pollack is an attorney at Marten Law LLC, one of the oldest, largest, and most diversified environmental law firms in the country, where he leads the firm’s consumer products regulatory practice. James’ work has largely focused on emerging contaminants like PFAS, as well as litigation related to the identification and cleanup of PFAS contamination in community water supplies. Contributing authors include Isabel Q. Carey and Victor Y. Xu, also with Marten Law.*



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## BRIEFING

### Intelligence Report

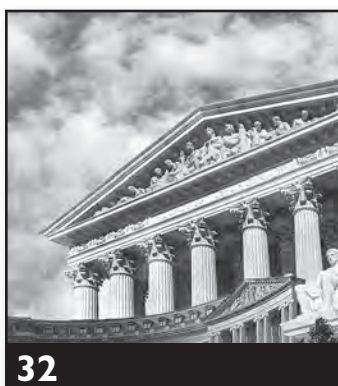
As AI expands its role in daily life, climate advocates have sounded the alarm on the technology's growing impacts on energy, water, and public health. Yet the public remains largely in the dark when it comes to understanding the full consequences of this boom.

**By Akielly Hu**

*Environmental Forum*

*With SIDEBARs by human futurist David Rejeski and by AI bot ChatGPT.*

Evan Odoms



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## CROSS-EXAMINATION

### From Deference to Deliberation

With less room to interpret ambiguous laws after the demise of the *Chevron* precedent, agencies must now work within narrow legal boundaries. Further, statutory meaning may come to be shaped by judicial reasoning rather than regulatory interpretation.

**By Loza Taye, Rebecca Critser, and Akosua Dufie**

*Johns Hopkins University Bloomberg School of Public Health*

*With SIDEBARs from John Cruden and Sanne H. Knudsen.*

Henry Payne



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## COVER STORY

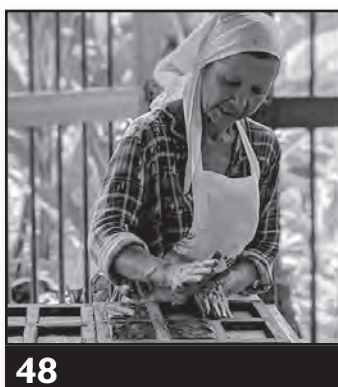
### The Shadow Rule

The little-known, judge-made administrative-remand rule can control access to federal appellate courts. It makes the courts more efficient and gives agencies space to correct their errors, but it also hamstringing litigants and can undermine environmental protection.

**By Matthew J. Sanders**

*Stanford Law School*

*With SIDEBARs from Norman A. Dupont and Andrew Mergen.*



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## FIELD REPORT

### Chocolate With No Bitter Aftertaste

A few companies exercise control over the global cacao supply—profiting handsomely from tropical deforestation and human rights abuses. But there is another way. A paradigm changer's experience working directly with producers committed to sustainable production of heirloom cacao.

**By Lori Shapiro**

*Sueños Heirloom Chocolate*



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## THE DEBATE

### Green Hydrogen: Boon or Boondoggle?

Supporters envision an energy economy built on zero-carbon fuels that cut air pollution and create new jobs while building on existing electric and gas infrastructure. But critics describe the green hydrogen economy as a pipedream and an expensive energy boondoggle. Currently comprising less than 1 percent of global hydrogen production, clean hydrogen investments will reach a 31 percent annual compound growth rate by 2032, predicts fuel cell company Plug Power, Inc. But what are the green hydrogen economy's real projected impacts?

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## Public Lands

### Are They Investments or Sales Inventory?

By Lynn Scarlett

Amid the furor over the Trump megabill passed in July, one provision of concern to the conservation community—the sale of public lands—did not make the final cut. Originally proposed by Senator Mike Lee (R-UT), the measure drew swift opposition, even with some Republicans such as former Secretary of the Interior Ryan Zinke, now representing Montana in the House, vowing not to vote for any bill including sale of public lands.

The concept of selling federal public lands is neither new nor likely to be permanently abandoned. As Steven Davis recounts in his book *In Defense of Public Lands: The Case Against Privatization and Transfer*, political pressures to sell off these lands span over a century-long “tug of war between disposal and retention.” Between 2010-17 alone, at least 17 congressional proposals to sell, transfer, or shift management of public lands surfaced, though none were passed.

Federal public lands total 635 million acres or near 30 percent of the 50 states. Though the bulk of these lands are in the western United States and Alaska, wildlife refuges, national parks, and national forests exist in every state and territory. They are, as Davis opines, “a window into the larger society and its many contradictions and internal tensions,” tensions especially acute between impulses to preserve landscapes, wildlife, and habitats—and appetites for expanding resource extraction.

Indeed, over the past 150 years, public land management has been

a saga of tensions at the interface of people and places. At this juncture, public land managers face complexities: Should snowmobiles traverse Yellowstone? Where might ranchers graze cattle? Where might we cut timber for our homes, find energy to warm them, or minerals that transform into toothpaste and computer screens? Should wolves be re-introduced? And who should decide?

Amid this complexity, Davis acknowledges that the record of public land management is imperfect. He recounts failures that include overgrazing,

cient, just plain wrong, coercive, and even corrupt. Sometimes proponents of sale or transfer offer “articulated coherent manifestos of local control and centrality of private property,” but they also sometimes display a “cauldron of anti-government sentiment.”

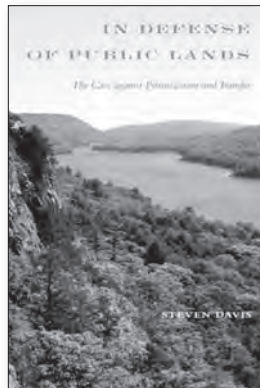
While proponents of privatization, transfer, or, more modestly, a shift to non-federal management deploy varied rhetoric, Davis clusters their views into economic, biological, and political (including ideological) arguments. His case against such logic is both empirical and philosophical.

Davis taps extensive data to rebut the economic case for taking ownership out of federal hands. Federal management, proponents argue, brings a poor return on investment. Davis cites one such study suggesting that federal land management is not profitable, with a return on investment of \$.73 for each

\$1 spent, contrasted with the record of state trust lands that bring in 20 times as much. Such analyses, argues Davis, fail on multiple grounds. At a very simple level, state trust lands were set up specifically to maximize revenues and were never intended as nature preserves.

Beyond this faulty comparison, Davis argues that tallying appropriations budgets against direct revenues, whether from recreation fees, grazing fees, or other resource extraction income, misses the fundamental purposes of most federal public lands; ignores indirect benefits to local communities associated with public visitation on these lands; and overlooks the values of nature itself—sometimes called ecosystem services—water purification, flood abatement, carbon sequestration, and more.

Davis argues that use of a profit-and-loss lens is inappropriate, as these governmental agencies provide many public services (wildland fire fighting, endangered species protection, education, stream gauge operations, public safety,



**In Defense of Public Lands: The Case Against Privatization and Transfer.** By Steven Davis. Temple University Press (Philadelphia): 2018.

clear-cutting in steep terrain, predator controls that nearly annihilated species, fragmented gas-drilling infrastructure, massive water projects, and more.

Sometimes, these failures fueled the case for transferring management to states or the private sector. Proponents, Davis notes, sometimes make their case in terms of environmental benefits—drawing upon Garrett Hardin’s arguments that “commons” result in resource exploitation and overuse. Or proponents point to failure of public management that they aver is ineffi-



# In the Literature

and more) ill-suited for fees-for-service or other revenue generation. Even using the profit-loss formula, many analysts suggest there is far more economic value to be gained from recreation than from increased resource extraction.

Davis cites a 2011 letter from 100 economists to President Obama pointing out that public lands have transformed economies of the West away from resource extraction to hubs for finance, software development, insurance, health care, and other high-tech enterprises. Headwaters Economics, an environmental economics think tank, assesses the data behind western state economies, showing, as Davis recounts, “a strong correlation between the amount of federal land protected as parks, wilderness, monuments, or wildlife refuges in a given western county and that county’s employment growth rates from 1970-2010.” He concludes that the “real value of public land lies in its status as a supercharged lifestyle amenity and central element in quality-of-life considerations.”

While traditional metrics of economic health tilt in favor of sustaining federal public lands, Davis looks beyond marketable commodities to the value of nature’s services. He points to a “torrent of research by resource economists” and a “huge, complex, multifaceted body of literature” that strives to put a dollar value to these services. This research, subject to varied assumptions, reaches widely varying conclusions about nature’s worth. Despite the variation, this value, as Davis notes, is significant—and entirely unexamined by those using federal lands revenues as the measure of benefits.

**B**eyond economics, Davis looks at the environmental contribution of public lands and compares this value to that of private lands. He concurs that, historically, some federal management has been environmentally destructive. But he offers two counterclaims.

First, many destructive practices, such as dam building, clear-cutting on

steep slopes, and more, have ceased. Second, critics of federal environmental management often depend upon a logical fallacy: “However destructive government management has been in the past (or even now), this fact, in and of itself, says absolutely nothing about how private management would perform as an alternative.” Further: “Only data can achieve that, and the comparative data . . . are pretty definitive. . . . Studies show . . . that public lands, as a whole, outperform private lands.”

While data may, in general, show such results, many private landowners are conservation leaders. Indeed, we see a broadening of private land stewardship, especially collaborative conservation among landowners. But such efforts unfold in tandem with, not as a substitute for, sustaining federal public lands.

Over 100 years ago, scientist and explorer John Wesley Powell observed, “People must necessarily work together for common purposes within interconnected spaces and places.” Many significant resource management and restoration issues transcend jurisdictional boundaries. Among these are climate change effects, water supply and quality issues, fire management, invasive species management, and wildlife protection. Thus, we see a prominence of large-scale national and regional initiatives, such as the restorations of the San Francisco Bay-Delta, the Everglades, and Chesapeake Bay. All of these are decades-long, large-scale efforts that depend upon sustaining federal public lands as anchors of action. They require the sort of coordination Powell envisioned, with cooperation among federal, state, and local agencies working with industries, private landowners, and nonprofit organizations.

Arguments for large-landscape, collaborative conservation reinforce Davis’s premise that retaining federal public lands is both economically and environmentally important. But he

also tackles philosophical and political arguments. He contests the notion that market transactions are, as privatization champions assert, objective reflections of value, while viewing environmental values as normative. In any event, Davis notes, “public polls show lopsided and bipartisan majorities in favor of protecting public lands as well as keeping federal lands in federal hands.”

Ironically, overwhelming public support for federal public lands is not matched by investment. In 1977, natural resources and environment spending accounted for 2.75 percent of the federal budget; as of 2013, it was less than 1 percent. Spending on conservation is even more constrained.

This pinched investment affects services, fueling some arguments for transfer of lands to states or the private sector. Yet my eight years of experience at the Department of the Interior revealed extraordinary dedication and knowledge of civil servants who, despite budget constraints, juggled multiple, often competing legal mandates on public lands, such as disaster response; wildland fire fighting; generation of science and other information essential to understanding natural systems; stewardship of lands and waters; and so much more. This civil service performance is entirely at odds with claims of inefficiency, waste, or abuse from many proponents of privatization or transfer.

There are legitimate questions about how to strengthen management effectiveness, enhance public voices—local and national—in decisionmaking, and augment shared solving of very complex issues, questions Davis does not explore. But he combines extensive data with a coherent framing of how to think about the value and purposes of federal public lands.

*Lynn Scarlett was deputy secretary of the interior during the George W. Bush administration.*

**“Studies show . . .  
that public lands, as  
a whole, outperform  
private lands”**

# PACIFIC SALMON LAW AND THE ENVIRONMENT

## Treaties, Endangered Species, Dam Removal, Climate Change, and Beyond

by Michael C. Blumm

The law and policy of salmon protection and restoration are complex, and matters surrounding salmon implicate topics as varied as Indian treaty fishing rights, dam management and removal, international treaties, predator control, and climate change.

*Pacific Salmon Law and the Environment* chronicles the diverse issues concerning salmon allocation, management, and restoration in the 21st century, providing the historical understanding necessary for an accurate perspective of the present-day problems salmon face. The book is a must-read for ecologists, biologists, attorneys, educators, activists, students, and others concerned about the fate of salmon in the Pacific Northwest in the climate-challenged 21st century.

"The leading authority on Pacific salmon law has given us this compelling and well-written book, by far the most comprehensive work ever done in the field. Importantly, he warns us that the very future of the Pacific salmon, the true heart of the Pacific Northwest, is at risk.

The cause is long-time destruction of salmon habitat beginning with hydroelectric dams and high-yield logging, joined today by relentless climate change. Blumm's book vividly shows the importance of law in this field and the urgency of further law reform."

—Charles Wilkinson, Distinguished University Professor,  
University of Colorado, and author of *Crossing the Next Meridian:  
Land, Water and the Future of the West*

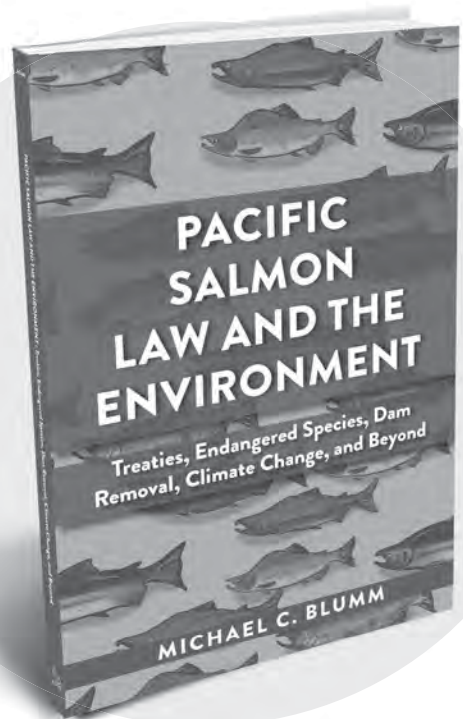
"Blumm's book is a comprehensive, insightful, and timely analysis of how the law has affected the Pacific Northwest's most iconic natural resource."

—Sandra B. Zellmer, Professor and Director of  
Natural Resources Law Clinics, University of Montana School of Law



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# Alarms About Trump Assaults on Federal Science and Data Banks

**C**oordinated attacks on federal environmental science and data systems by the Trump administration are deeply alarming to scientists and activists who see an unraveling of the American research enterprise of the last 80 years, including federal programs and university studies.

In a May executive order, titled “Restoring Gold Standard Science,” Trump declared a commitment to federal decisions based on “the most credible, reliable, and impartial scientific evidence available.” But according to a protest letter signed by more than 10,000 scientists, Trump’s Gold Standard E.O. is a “bad faith appropriation of scientific language and principles.”

Applicable to all federal agencies, the new E.O. will politicize governmental science because it makes the unprecedented requirement that every agency must designate a political appointee who would have wide latitude in enforcing the order—and “correcting” violations, which are poorly defined, says Chris Frey, a professor of environmental engineering at University of North Carolina and former EPA assistant administrator for research and development.

Under the 2001 Information Quality Act’s processes, petitioners can ask for federal scientific products to be corrected. But career staff, not a political appointee, review whether scientific errors exist and require correction, Frey says. That’s a process industry uses often to challenge EPA chemical toxicity assessments in a “proxy war” against downstream regulatory decisions. But importantly, the IQA process separates scientific information assessments, subject to peer review, from regulatory policy judgments of “acceptable risk,” which are subject to public comment.

Besides creating a political appointee science reviewer, the E.O. revives

features of EPA’s 2021 “science transparency” rule, Frey notes. That rule was widely criticized as a constraint on the agency’s use of the best available science and was quickly overturned by a federal court on procedural grounds. Like the defunct rule, the new E.O. emphasizes scientific studies’ “reproducibility”—a reasonable way to “check” studies but less important than the more robust finding of studies’ “replicability.” Reproducibility doesn’t mean a study is “correct,” just that researchers using the same data and methods get the same answer. When multiple studies test the same hypothesis using different data and methods, yet replicate findings, the weight of evidence is greater.

Nonprofits such as the Union of Concerned Scientists and the German Marshall Fund of the United States are deeply disturbed by Trump’s assault on sound science. As of June, UCS counted 66 potential attacks on scientists and federal science-based policies. For example, EPA announced plans to repeal Clean Air Act greenhouse gas emissions standards for power plants that are justified by the 2009 scientific finding that GHGs endanger human health. By law, CAA regulations must use the best available science. Even though scientific evidence of GHG harms has become stronger, EPA is seeking to withdraw controls on the emissions. It’s “not just neglect of science but hostility,” says Frey, suggesting that political leaders don’t want science but “prejudged political decisions.” Frey worries that becoming “untethered to evidence” could be a strategy adopted under future administrations of either party, to no one’s benefit.

In addition to Trump’s E.O. and related policies, the administration has fired staff scientists at EPA, the National Oceanic and Atmospheric Administration, and the National Weather Ser-



**David P. Clarke** is a writer and editor who has served as a journalist, in industry, and in government. Email him at [davidpaulclarke@gmail.com](mailto:davidpaulclarke@gmail.com).

vice, and has gutted National Science Foundation research funding. NOAA, EPA, and the Energy Department are among agencies that have seen datasets removed, diminishing access to public information Americans pay for.

In March, a leaked EPA reorganization plan suggested that the agency could cut up to 75 percent of scientists in its Office of Research & Development as part of Trump’s push to shrink the federal government. Also that month, EPA Administrator Lee Zeldin announced he was reconsidering the “burdensome” program that since 2010 has required approximately 8,000 large sources to annually report their GHG emissions. States that rely on federal funds for monitoring also face losing important data, as EPA “pass through” science funding declines.

In June, a South Florida meteorologist warned that Trump’s cuts to the NWS, which resulted in its losing almost 600 people, could leave him and other television forecasters “flying blind” during hurricane season, unable to predict a hurricane’s intensity before landfall. In response to the NWS staff losses, House lawmakers are considering a bipartisan bill that would define NWS forecasters and other staff as “critical public safety” workers, making them hard to fire. Indeed, as global temperatures rise, with increases in drought, flooding, and other extreme weather events, we’ll need many more meteorologists and other experts to know which way the wind blows.

**We’ll need many  
more meteorologists  
to know which way  
the wind blows**

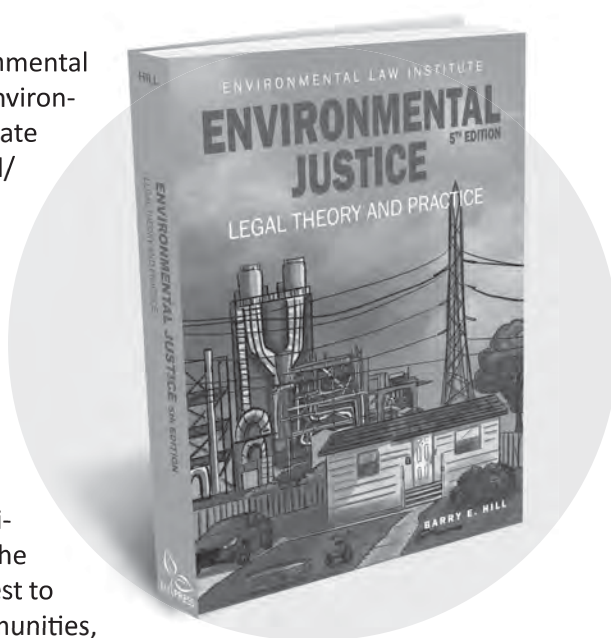
# ENVIRONMENTAL JUSTICE:

## LEGAL THEORY AND PRACTICE, 5TH EDITION

by BARRY E. HILL

Race and socioeconomic status should not dictate the environmental health risks we face. Yet, too often this is not the case. The environmental justice movement seeks to avoid, minimize, and mitigate disproportionately high and adverse impacts on minority and/or low-income communities and to ensure that disadvantaged communities are engaged meaningfully in environmental decisionmaking processes.

*Environmental Justice: Legal Theory and Practice* provides a thought-provoking exposition and comprehensive review of the complex mixture of environmental laws and civil rights legal theories that are central to this still-evolving area of law. The book, now in its 5th edition, includes all of the significant cases and developments that have occurred since the prior edition. Readers will come away with a deep understanding of the dynamics of environmental justice and gain insight as to how best to address the issue through enlightened leadership in our communities, government agencies, state bar associations, law offices and legal services providers, law school clinics and academic institutions, and corporations.



“As the great civil rights issue of the 21st century, environmental justice has become an increasingly crucial law school course, and Prof. Barry Hill’s book continues to serve as an essential primer for law students and seasoned practitioners alike. In this newest edition, Professor Hill meticulously details the societal context and ‘hard law’ of environmental justice—through the perspectives of social justice, geographic justice, and procedural justice—to help stakeholders better understand the dynamics of this ever-evolving and expanding body of law.”

—Benjamin Wilson, Adjunct Professor of Environmental Justice,  
Howard University School of Law



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# Actions by State AGs Abound, but Efforts Seek to Limit Authority

**A**midst unprecedented federal regulatory rollbacks and draconian staff and funding cuts, many are pointing to the critical role that state attorneys general are playing in protecting the environment and advancing clean energy.

David Hayes, Stanford Law School professor and founding executive director of New York University Law School's State Energy & Environmental Impact Center, explains that the AGs are "extremely important, because as state-wide officials they have the standing and authority to represent their constituents' interest in ensuring that the law is being followed and enforced appropriately." According to Hayes: "As climate and environment have risen in importance, so has the role of AGs in protecting their constituents' interests."

The NYU center's database shows that AGs sprang into action quickly in the new administration and are acting both collaboratively and independently. Their efforts are not limited to litigation and include filings in regulatory proceedings, sending letters to Congress, and holding town hall meetings.

Specifically, AGs have engaged in multistate litigation in 18 cases—with the number of states participating ranging from two to 23. In most cases, the AGs initiated litigation, but in others they filed amicus briefs or a motion to intervene. At this point in the Biden administration, AGs had engaged in only two multistate actions.

To date, multistate litigation has involved some or all of the 21 Democratic AGs. This partisan alignment is nothing new in an era of political polarization, but Hayes says he expects some level of bipartisan cooperation. He explains: "AGs have traditionally worked together across states on mat-

ters of great importance to Americans broadly, such as tobacco and opioids, to strengthen their cases and expand the relief that courts can provide."

Many of the multistate cases focus on systemic issues—funding and program cuts. These lawsuits address support for states' environmental and clean energy work, such as funding for resiliency, electric vehicles, emergency infrastructure improvements, and clean energy. But the cases also challenge reductions in broader programs, including funding for scientific research, communications during disasters, and the AmeriCorps program.

Other multistate litigation addresses specific regulatory and permitting rollbacks. These actions include challenges to the repeal of the Cal-

ifornia Clean Vehicle Program, the moratorium on onshore and offshore wind energy project permits, and the executive order declaring a national energy emergency, which paved the way for permitting of energy projects without environmental reviews. Individual AGs are also engaged in over 30 actions that include pollution-related cases against individual companies.

In addition to litigation, AGs are jointly involved in over 20 federal administrative proceedings. For example, AGs have submitted joint comments to numerous federal agencies on topics that include offshore oil and gas drilling, endangered species protections, energy efficiency standards, and pesticide residues in food. And individual AGs are also engaging in administrative proceedings related to facilities in their states.

Moreover, AGs have collaborated on four letters to Congress, including a letter signed by 39 opposing potential funding cuts to the World Trade



**Linda K. Breggin** is director of ELI's Center for State, Tribal, and Local Environmental Programs. She can be reached at [breggin@eli.org](mailto:breggin@eli.org).

**In the meantime, the AGs are likely to continue their actions apace**

Center Health Program that supports September 11 first responders and survivors. The letter represents the only time so far in 2025 that any of the 28 Republican AGs have joined their Democratic counterparts. Other letters have urged Congress to: oppose weakening Endangered Species Act protections; maintain the Environmental Protection Agency's reliance on science; and end the national energy emergency.

The work of the AGs is occurring against the backdrop of an April executive order entitled "Protecting American Energy From State Overreach" which, according to a White House fact sheet, directs the U.S. attorney general to "prioritize taking action against laws and policies purporting to address 'climate change' policies, or involving 'environmental, social, and governance' initiatives, 'environmental justice,' carbon or 'greenhouse gas' emissions, and funds to collect carbon penalties or carbon taxes."

In response to AG activism, there is legislation in North Carolina that would limit its AG's authority to challenge presidential executive orders. Hayes emphasizes that such measures are "an existential threat to federalism and state prerogatives" that could "undermine the basic system that we have had in place since our founding."

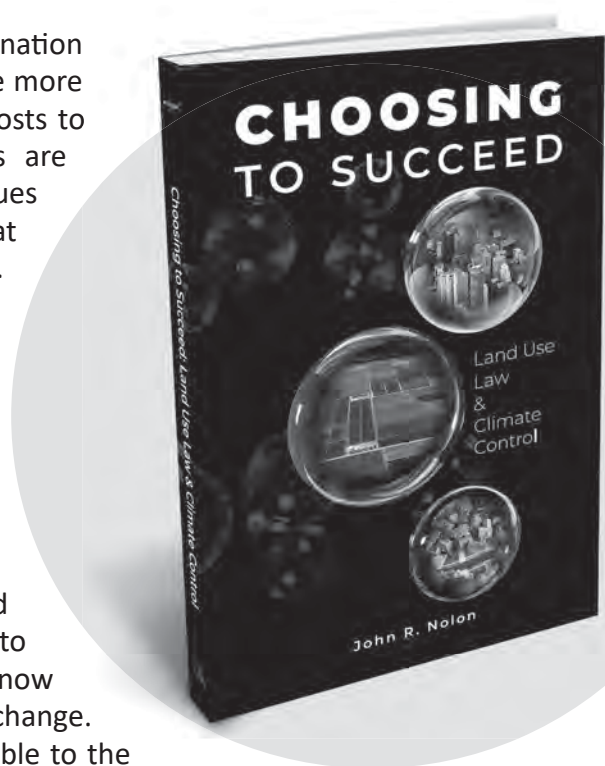
It is too early to tell whether efforts to narrow the scope of their authority will gain momentum. In the meantime, the AGs are likely to continue their actions apace.

# Choosing to Succeed: Land Use Law & Climate Control

by John R. Nolon

Land use climate bubbles are popping up throughout the nation at an alarming rate, creating an economic crisis that will be more damaging than that of the housing bubble of 2008. The costs to ecosystems and low- and moderate-income households are equally severe. These bubbles, where land and building values are declining, provide extensive, objective evidence that climate change is real and must be dealt with on the ground. And it sidelines the ideological battles over the political response and instead requires us to focus on the practical question: what can we do to respond?

Climate action seeks to avoid the harm we can't manage and to manage the harm we can't avoid. Local leaders understand the urgency of the crisis and are highly motivated to learn how to prevent and mitigate its consequences. This book describes how the local land use legal system can leverage state and federal assistance to reduce per capita carbon emissions as an important and now recognized component of global efforts to manage climate change. The tools and techniques presented in the book are available to the nation's 40,000 local governments, if led by courageous leaders choosing to succeed in this epic battle.



*"Professor Nolon has pioneered many advances in local environmental law and practically invented the field. Since the 1990s, he has identified the ways local governments influence environmental protection, how they have obtained the power to do it, and followed that with theories of how local players can coordinate with one another and collaborate with large scales of power. Integrating those ideas into a book focused on the climate crisis is a crowning achievement."*

—Robert Verchick, Gauthier-St. Martin Eminent Scholar and  
Chair in Environmental Law, Loyola University New Orleans College of Law



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# A Bonanza of Decisions That Will Change Environmental Practice

Last term, the Supreme Court addressed some very basic issues, such as environmental review, the nondelegation doctrine, the use of the *ultra vires* doctrine in limiting agency power, standing, and venue. These decisions are sure to change how environmental law is practiced.

In *Seven County Infrastructure Coalition v. Eagle County*, the Court explained it was seeking to “reiterate and clarify fundamental principles” applicable to National Environmental Policy Act cases. The Court held that NEPA only requires the U.S. Surface Transportation Board to review impacts from the project at hand, not its downstream effects. The project at issue is an 88-mile railroad link that, when built, will make it possible to ship crude oil and other fossil fuels from the Uinta Basin to Gulf Coast refineries.

The D.C. Circuit had decided that the STB improperly ignored the likely downstream impacts of those rail shipments. But the high court reversed. Those future refining decisions were too “attenuated” and not within the control of the board, and thus it was not required to look at them.

In its decision, the Supreme Court took an approach to deference that may have an impact on future disputes involving the science and data that are often at issue in environmental cases. After the Court’s recent decision in *Loper Bright*, courts do not give agencies deference in how they interpret statutes. But in *Seven County*, the Court explained that the STB’s decision about whether a particular environmental report is “detailed” enough under the statute should not be “excessively second-guessed by a court.” The judiciary should not interfere by micromanaging when an agency has to make “predictive and scientific judgments” about the likely impacts of a project.

**These cases will affect the practice of environmental law nationwide**

The Supreme Court also issued a decision about the Federal Communication Commission’s universal access program that has implications for disputes about Congress’s power in general under the nondelegation doctrine. According to *FCC v. Consumers’ Research*, Congress may delegate its power to an agency, but only if it provides an “intelligible principle” that sufficiently guides and constrains the discretion it has given. The FCC’s program passed muster under this standard.

In the process of upholding the program, the Court explained that other statutes also give sufficient instructions to agencies to implement health-based standards and other public-interest-based standards. This may mean that future nondelegation challenges to environmental-focused provisions can be defeated. Nonetheless, given the clear endorsement of the doctrine in this case, it is hard to imagine that these types of challenges will cease.

In *Nuclear Regulatory Commission v. Texas*, the question was whether an *ultra vires* challenge was properly brought. The Court rejected the challenge, explaining that claims over agency power can only be brought if there is a specific statutory prohibition against the agency’s decision. There are many cases pending right now with *ultra vires* claims, as chronicled in an online tracker hosted by Just Security. So this opinion may have impacts on cases going forward.

The standing case that the Court issued, entitled *Diamond Alternative Energy v. EPA*, has to do with a challenge to the agency’s decision to authorize California regulations regarding greenhouse gas emissions under the Clean Air Act. The Court found that the fuel producers could show standing based on “predictable downstream effects” of the regulation on their business.



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Reiterating a recent standing case, the Court explained that even one dollar of additional revenue would satisfy constitutional redressability, which ordinary economic principles helped the petitioners show. It will be interesting to see if both regulated entities and other affected parties, including environmental plaintiffs, can succeed in using the idea of predictable effects to assert standing going forward.

There were two cases dealing with the CAA’s venue provision, one about the renewable fuels program and one about cross-state pollution. The venue provision states that challenges to “nationally applicable” regulations under the act must be made in the D.C. Circuit. If the regulation is “locally or regionally applicable,” then it can be challenged in the relevant circuit, unless the rule is based on a “determination of nationwide scope or effect.”

The two cases came out differently. In its decision about cross-state air pollution, the Court held that a nationwide framework EPA had used was not the “primary driver” of the agency’s decision and therefore not enough to send the cases to the D.C. Circuit. Meanwhile, in the case about the renewable fuels program, the agency had relied on a nationwide determination for its many decisions regarding exemptions under the program, so the cases belonged in the D.C. Circuit.

This term’s cases have many procedural and substantive implications for the practice of environmental law and arguments made in federal courts.



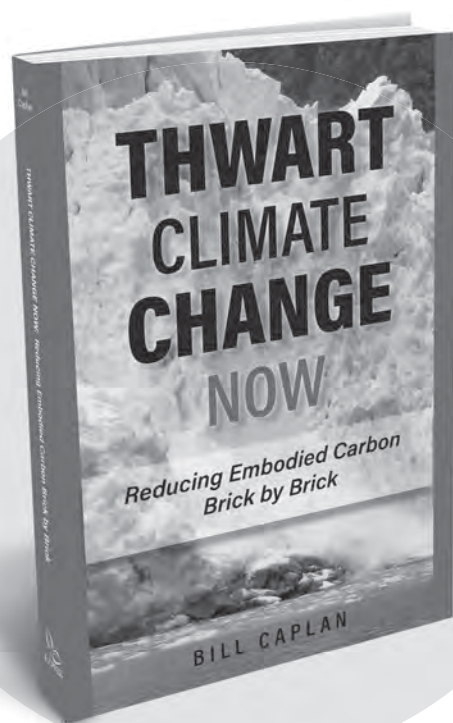
# THWART CLIMATE CHANGE NOW

## *Reducing Embodied Carbon Brick by Brick*

by Bill Caplan

*Thwart Climate Change Now: Reducing Embodied Carbon Brick by Brick* addresses an imperative—to slow the pace of climate change within the coming decade—before it's too late. While climate policy typically focuses on future decarbonization 10 to 20 years out, temperatures continue to rise. Greenhouse gases emitted upfront from the materials fabrication, construction, and renovation of our physical environment—embodied emissions—accelerate the rate of global warming now. Sadly, they increase atmospheric carbon before our buildings and infrastructure are even used. Often ignored or deemed too perplexing to resolve, the need to reduce embodied emissions immediately is the subject of this book.

Written for a variety of readers—from policymakers and legislators to architects and developers—*Thwart Climate Change Now* addresses how to tackle the built environment's "embodied" carbon emissions, highlighting specific design and policy issues that overlook their own contribution to atmospheric carbon. The book brings together the science of climate change, sustainable design, and green policies in a language accessible to a diverse readership, followed by case study examples to support design, policy, and legislative recommendations to slow emissions growth in the near term.



*"Bill Caplan's book is a wakeup call for everyone seeking to reduce carbon emissions in newly built and retrofitted buildings. Reducing these emissions is neither easy to do nor to calculate. Caplan's book provides a detailed analysis of the best practices for architects and builders, but also explains to everyone interested in the subject pitfalls, like failing to take into account the impact of embedded carbon from the parts that are used in construction and energy systems, and the misleading claims that are being made about emission reductions. It is a must read for everyone interested in this important subject"*

—Ken Berlin, President & CEO, The Climate Reality Project



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# Economic Significance of Power Sector Carbon Dioxide Emissions

**T**he Environmental Protection Agency recently proposed a repeal of the 2024 greenhouse gas emissions standards for fossil fuel electric-generating units. This regulation establishes performance standards projected to reduce U.S. power sector emissions of carbon dioxide by approximately 1.4 billion tons over the next two decades. In addition, this rule would reduce emissions of fine particulate matter as well as pollutants that contribute to higher ground-level ozone.

As a part of its justification for repealing the power plant rule, EPA claims that greenhouse gas emissions from the U.S. power sector “do not contribute significantly to dangerous air pollution.” The EPA proposal notes that the U.S. power sector share of global emissions has declined over time and represents only 3 percent of total annual global CO<sub>2</sub> emissions. The proposal concludes that this “suggests that the risks to public health and welfare attributed to anthropogenic climate change would not be meaningfully different” even if American utilities totally eliminated their greenhouse gas emissions.

Annual U.S. power sector emissions exceed the fossil fuel CO<sub>2</sub> emissions of every country in the world, except for China, India, and Russia. If the rest of the world took EPA’s new interpretation, then virtually every nation could claim it does not significantly contribute to climate change and avoid taking action. But the share-of-global-emissions framing avoids entirely the question of whether the public health and welfare outcomes are significantly affected by—or meaningfully different under a reduction in—U.S. utility emissions.

Carbon dioxide from the U.S. power sector contributes to an array of ad-

verse climate change impacts to public health and welfare, including increased premature mortality, higher energy expenditures for cooling, reduced agricultural output, greater infrastructure damages from sea-level rise, and lower labor productivity. In 2023, EPA produced estimates of the “social cost of carbon”—the loss in economic welfare associated with these impacts caused by each ton of CO<sub>2</sub> emissions. The agency’s analysis drew from an extensive research literature published in top scientific and economic journals, building on guidance from a 2017 National Academy of Sciences report.

Based on this work, EPA concluded in its regulatory analysis of the 2024 rule that cutting power plant CO<sub>2</sub> emissions would produce about \$14 billion in annual benefits from mitigating climate change-related impacts to public health and welfare. This measure represents the global benefits of reducing U.S. power sector emissions; a domestic-only measure would yield only about a billion dollars of benefits annually.

Considering the longstanding regulatory practice under Executive Order 12866 and OMB Circular A-4—dating back to the Clinton administration and used by the current administration—to deem a regulatory action as economically significant if it results in at least \$100 million in annual impacts, the climate change benefits associated with this rule easily meet this standard for significance.

Applying a domestic-only measure of the adverse impacts to public health and welfare to annual U.S. power sector emissions results in annual damages on the order of nearly \$25 billion. Claiming that 3 percent of a global problem is not significant, as well as claiming that addressing this share would not result in a meaningfully difference, is incom-



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plete and misleading. Three percent of a trillion-dollar problem is significant.

EPA’s new proposal avoids such an assessment by assuming zero benefits from reducing CO<sub>2</sub> pollution. Ignoring both decades of research and regulatory agency practice in the Bush II, Obama, Trump I, and Biden administrations, the current agency claims that uncertainty in estimating the benefits of mitigating climate change precludes any monetization. This ignores both the approach under George W. Bush, which focused on presenting several estimates of the social cost of carbon reflecting alternative scenarios, and the more recent work used in all subsequent administrations, which focused on probabilistic analysis of the economic and scientific uncertainties in estimating the impacts of climate change. In short, regulators and scholars have well-developed tools for incorporating uncertainty in their analysis of climate change impacts.

The EPA regulatory analysis for its 2025 proposal does not produce a monetized measure of the impacts of higher CO<sub>2</sub>, fine particulate matter, and other emissions. If the agency did so, it would show that the regulatory repeal delivers greater social costs (from higher pollution) than social benefits (from avoided regulatory compliance costs). The climate change impacts from the U.S. power sector significantly impact the public health and welfare of Americans, and rolling back this regulation makes citizens significantly worse off.

**Rolling back this regulation makes citizens significantly worse off**

# Governing for Sustainability

**John C. Dernbach and Scott E. Schang**  
Editors

Sustainable development may be one of the most important and potentially transformational ideas to come out of the last century. The ultimate objectives of sustainable development are freedom, opportunity, justice, and quality of life for everyone in this and future generations. While the United States has a substantial body of environmental and social protection laws, we are far from being a sustainable society. The question is what to do.

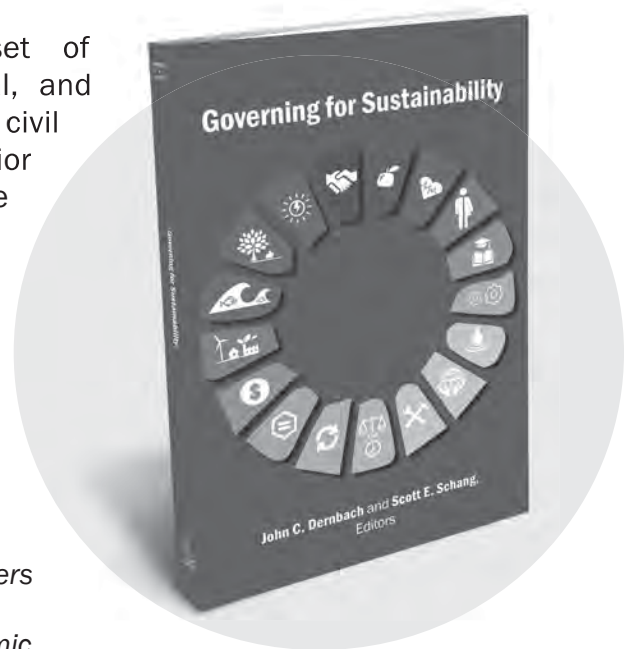
**Governing for Sustainability** provides a detailed set of recommendations for federal, state, tribal, territorial, and local governments, as well as the private sector and civil society. The various contributions that personal behavior can make toward both public and private governance are included as well. These recommendations would help make America a better place for all. Every American has a role to play.

*Dernbach and Schang have brought together a rich, diverse set of voices to outline how the United States can build a more sustainable economy and society. Small-gauge sustainability targets are not enough. As with recent administrative and legislative breakthroughs in climate, leaders can and must craft solutions that simultaneously advance multiple sustainability goals such as job creation and economic growth, public health, and social justice.*

—David Hayes, Lecturer, Stanford Law School; former Special Assistant to the President for Climate Policy; and former Deputy Secretary of the Interior

*Governing for Sustainability offers an inspired, timely, and important roadmap for meeting the wide ranging political, economic, and social justice challenges our nation faces in achieving sustainability. Each chapter, authored by one or more of the nation's leading experts, is a treasure to be mined.*

—Richard Lazarus, Howard J. and Katherine W. Aibel Professor of Law, Harvard Law School



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# The Synergy and Conflicts of Public Versus Private Science

Starting on January 20, the new administration has systematically purged climate science from the federal government, across an array of agencies. Officials terminated or reassigned employees who were coordinating the 2027 National Climate Assessment for the National Oceanic and Atmospheric Administration, and removed past assessments from NASA's website, although they are still available elsewhere. Trump's proposed 2026 budget would eliminate funding for the Mauna Loa Laboratory in Hawaii, where researchers measure atmospheric carbon dioxide, to continually update data going back to 1958.

All this is broadly consistent with the Project 2025 goals, which specifically states that "NOAA should be dismantled and many of its functions eliminated, sent to other agencies, privatized, or placed under the control of states and territories."

The National Weather Service is housed within NOAA, itself part of the Department of Commerce. The NWS annual budget is a little over \$1 billion. It provides not just weather forecasting, but also operates a vast network of scientific equipment to gather basic climate and weather data, including not just terrestrial weather stations, but also balloons, buoys, commercial aircraft, and radar.

Here there is considerable tension, but also synergy, between public and private interests. A stable climate and benign weather are intrinsically public goods; one cannot privatize climate or weather in a manner analogous to how one can draw boundaries around, and thereby enclose, a piece of real property. Yet considerable climate and weather science are housed within Com-

merce, whose mission is to promote business. That said, there are indeed aspects of climate and weather that are better suited to private markets, for example insurance.

The December 2024 Senate Budget Committee staff report, titled "Next to Fall: The Climate-Driven Insurance Crisis Is Here—and Getting Worse," is instructive. It concerns data on recent homeowner's insurance non-renewals and premium increases. Committee staff requested insurance non-renewal and premium information from 41 private companies, and ultimately received data from just over half. The committee was not concerned with that response rate, and in my view it was appropriate for them to proceed. Even so, that low rate hints at potentially serious

problems. In many circumstances in science, such a low response rate would be a sign of potential data trouble, because of the possibility that those responding differed systematically from those not responding.

Even more critically, unlike public information from the government, insurance companies have considerable other climate and weather data and models that they would be unwilling to share publicly, as some of them have shared their non-renewal and premium data. Not only is insurance a competitive business, but mis-estimating risk by even a small amount can, quite literally, put an insurance company into bankruptcy. Those private firms have every incentive to obtain the very best available climate and weather data, and to develop detailed, accurate models to predict climate risks, and associated financial risks.

In a February speech, outgoing Federal Reserve Vice Chair for Supervision Michael Barr stated, "The



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**Eliminating public climate science will impede an inherently public endeavor**

recent wildfires in California should be a wake-up call." More concerning, he sees potential systematic financial risks of concern to the Federal Reserve: "Often the structure and regulation of insurance markets prevents risk from being appropriately priced, limiting the ability of market signals and contributing to the buildup of risks." Weakened public regulation of private insurance companies, though it has potential short-term economic benefits, could also lead to systematic risks, whereby not just a single private insurance company fails, but rather an entire public market in insurance or the equities fails.

All this should also give us pause. Privatizing or eliminating what is now public climate and weather science will inevitably result in significant portions of that science being unavailable to the public. We should strive for a climate and weather institutional ecosystem that has both strong and cooperative public and private institutions. There is a critical role for private insurance. Indeed, I would advocate privatizing flood and crop insurance, thereby reducing federal government expenditures, and likely with a net positive environmental benefit.

Eliminating public climate and weather science will not eliminate climate change. It will however greatly impede our ability to create effective and economically sensible climate law and policy, an inherently public endeavor.

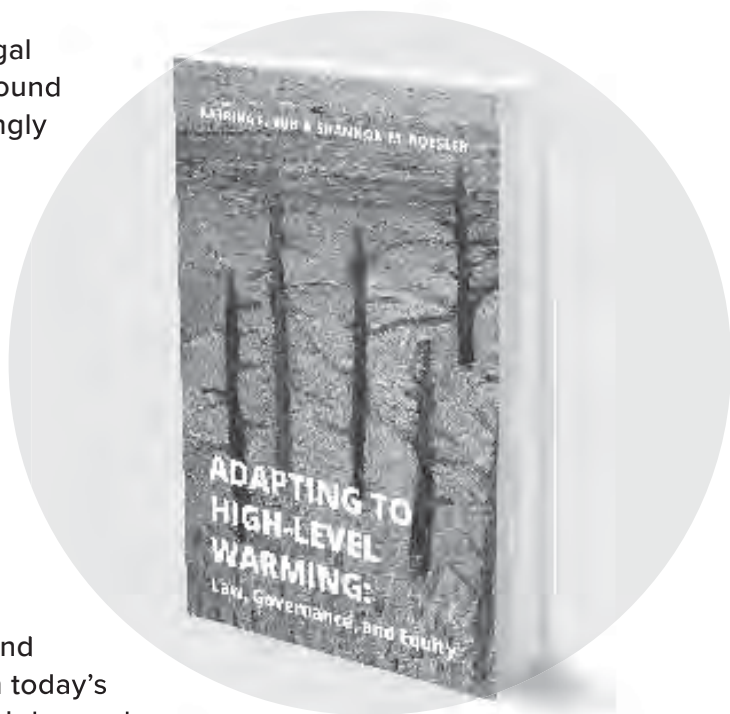
# ADAPTING TO HIGH-LEVEL WARMING: Law, Governance, and Equity

**Katrina F. Kuh & Shannon M. Roesler**

In seeking and analyzing climate solutions, most legal scholarship assumes a 2°C warming as the upper bound of temperature change. Yet robust science increasingly tells us a different story: warming beyond 2°C is likely, and warming as high as 3°–4°C by the end of the 21st century is a real possibility. Warming of this magnitude would have significant impacts on people. How can governance systems and institutions adapt, today, to prepare us for these future shocks? And what will be the general and specific challenges to law and policy?

The contributors to this book, the fifth in a series by the Environmental Law Collaborative, have taken up the challenge of thinking about law, governance, equity, and justice in a future shaped by high levels of warming. It begins by identifying and offering solutions to address the mismatch between today's legal and regulatory systems and the conditions and demands of high-level warming. The next set of chapters imagine more broadly the challenges of effective governance—across a range of laws, through democratic processes—under high-level warming. The book's concluding chapters focus on equity and justice.

Many of the ideas proposed in this book may sound wildly ambitious today but will ultimately appear modest when weighed against the tolls of a superheated climate.



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## Five Decades of Public Service and Dedication to Rule of Law

**“Y**ou have just presented your 160th argument before this court,” said Chief Justice John Roberts to longtime Deputy Solicitor General Edwin Kneedler standing at the lectern. “That is the record for modern times.” Noting the lawyer’s “extraordinary care and professionalism,” the Chief Justice then joined a standing ovation for Kneedler.

At the 2025 Annual Nancy Firestone Policy Forum, to be held October 7, the Environmental Law Institute will recognize Kneedler’s contributions to the rule of law and decades of public service. His career, spanning 10 presidential administrations and three chief justices, is a testament to the enduring power of principled legal advocacy.

Kneedler joined the Department of Justice in 1975 and moved to the Office of the Solicitor General in 1979, where he

remained for the rest of his career. As deputy SG from 1993 until his retirement this year, he was known not only for his relentless advocacy, but also for integrity and quiet excellence.

“Ed is the embodiment of the government lawyer ideal—one whose duty of candor to the court and interest in doing justice, not just winning a case, always carried the day,” said Gregory Garre, the SG under President George W. Bush. Merrick Garland, President Biden’s attorney general, echoed the sentiment: “As both an advocate before and a student of the Supreme Court, Ed represented the United States with the highest degree of skill and integrity. He was a true public servant and universally admired by everyone with whom he worked.”

Kneedler has received multiple recognitions for his record-setting tenure, but less attention for his substantial contributions to environmental,

natural resources, energy, and Indian law. Indeed, of his 160 high court arguments on behalf of the United States, at least 45 relate to these fields. Kneedler was responsible for a large portion of the cases emanating from DOJ’s Environment and Natural Resources Division, and his docket, as ENRD folks like to say, included lands and “critters.”

Open an environmental law case book and Kneedler’s influence is unmistakable. In the Court’s landmark Endangered Species Act decision, *Babbitt v. Sweet Home* (1995), Kneedler successfully defended the Interior Department’s regulatory definition of “harm” to include habitat modification that kills or injures wildlife. In

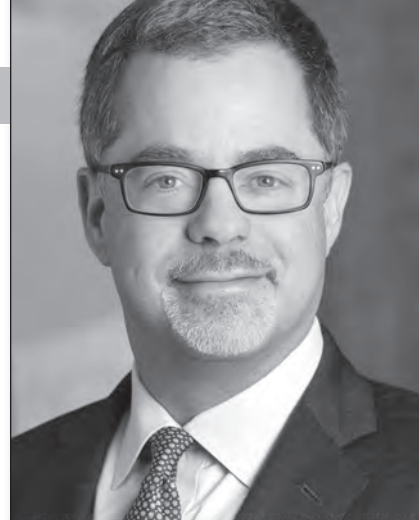
cases such as *Summers v. Earth Island Institute* (2009) and *Norton v. SUWA* (2004), he helped define the contours of standing and the Administrative Procedure Act.

He also argued important cases delineating state and federal ownership and control of the nation’s waterways.

Kneedler successfully defended his agency clients in some of the Court’s most influential NEPA decisions, from *Department of Transportation v. Public Citizen* (2004) to the recent 8-0 ruling in *Seven County Infrastructure Coalition v. Eagle County* (2025). And few advocates have been more directly involved in Fifth Amendment takings jurisprudence, including *Lingle v. Chevron* (2005), which clarified the line between regulatory takings and substantive due process claims.

His cases relating to tribal rights and sovereignty deserves special note. “This has been a remarkable 50 years in the development of Indian law and the development of Indian tribes, their growth in self-determination,” Kneedler has reflected. It is “one of

**“Leading us to a more perfect union in which we are coming together, not apart”**



**Ethan Shenkman** is a partner in the environmental practice at Arnold & Porter. [Ethan.shenkman@arnoldporter.com](mailto:Ethan.shenkman@arnoldporter.com).

the most gratifying pieces of my work . . . because [it] affects real people’s lives.” Indeed, one of his most notable achievements was *Haaland v. Brackeen* (2023), in which he successfully fended off a constitutional challenge to the Indian Child Welfare Act.

The SG office’s reach extends far beyond the Supreme Court. Kneedler oversaw thousands of ENRD appeal recommendations in the circuit courts. He helped resolve countless interagency disputes, touching water rights, mining, energy development, and management of our public lands. As those of us who worked with him know, he played this role with humility and a keen appreciation for public servants working tirelessly to achieve and protect their agencies’ missions. Kneedler has eschewed personal credit, instead choosing “to pass on the recognition . . . to all the people [in public service] whom I have worked with over the years,” and their “compassion and understanding . . . and dedication to our country.”

In his recent acceptance speech for the prestigious Thomas Jefferson Foundation Medal in Law from the University of Virginia, his alma mater, Kneedler’s message to the next generation of lawyers was clear: public service is not confined to the feds. “We’re all in this together, even though we may be on the opposite side of a case. . . . We’re all part of a process that is leading us to a more perfect union, which means a union in which we are coming together, not apart.”

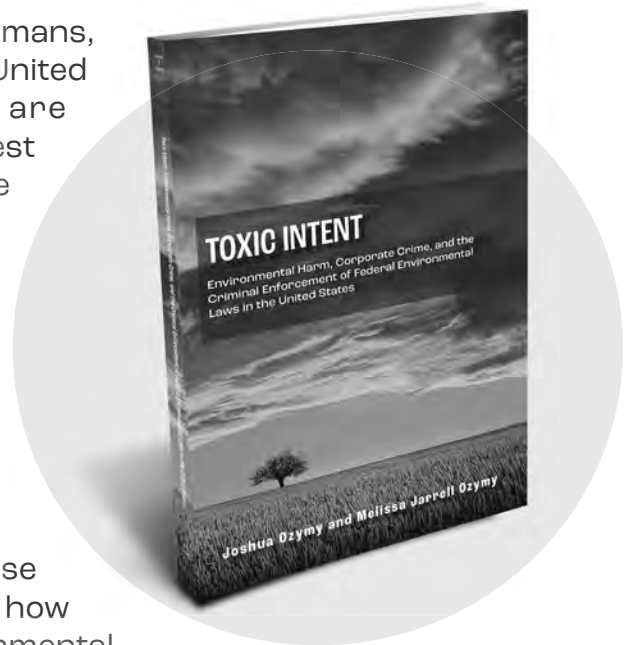
# TOXIC INTENT

Environmental Harm, Corporate Crime,  
and the Criminal Enforcement of Federal Environmental Laws  
in the United States

by Joshua Ozymy and Melissa Jarrell Ozymy

Environmental crimes cause serious harm to humans, animals, and the natural environment in the United States. Yet our understanding of how they are investigated, prosecuted, and punished is at best fragmented and incomplete. What crimes has the U.S. Environmental Protection Agency's (EPA's) Criminal Enforcement program investigated and federal prosecutors pursued since the institutionalization of the criminal enforcement apparatus? What major themes do we see in those prosecutions? What punishments are meted out to environmental criminals? Does this process have much deterrent value?

**Toxic Intent** provides readers with answers to these questions, offering a comprehensive account of how the federal government punishes serious environmental crimes in the United States. Based on the authors' detailed analysis and review of EPA criminal investigations and cases from 1983 to the present, readers will come away with a deep understanding of environmental enforcement in the United States.



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<https://www.eli.org/toxic-intent>

# The Price of the Beautiful Bill's Epic Wrong Turn on Climate Change



**Bob Sussman** is principal of Sussman and Associates, an environmental consulting firm. [bobsussman1@comcast.net](mailto:bobsussman1@comcast.net),

**T**he stark juxtaposition of two unrelated events on July 4 exposed the bankruptcy of U.S. climate policy. In Washington, D.C., Republicans celebrated passage of the One Big Beautiful Bill Act, which rolled back tax credits and subsidies for clean energy enacted just three years earlier. The same day, an unprecedented rainfall in Texas caused the Guadalupe River to rapidly overflow its banks, with the loss of over a hundred lives and extensive property damage.

No one in the Trump administration acknowledged a causal connection between climate change and the devastating flooding in Kerr County.

Yet for years, scientists and federal agencies have warned that extreme natural events (flooding from torrential rainfall and sea-level rise, wildfires, drought, life-threatening

heat waves) are on the rise because of increasing global temperatures.

The Texas tragedy was not an isolated nor unexpected event. Along with other weather-related disasters, a growing number of regions have experienced unusually heavy precipitation during short periods and rapidly rising waters in nearby rivers that inundate vulnerable communities and endanger life and property.

The public health and economic impacts of these destructive events are large and growing. According to a 2024 analysis by the National Oceanic and Atmospheric Administration, over the previous five years, the United States experienced 190 separate billion-dollar-plus disasters, which totaled to \$746.7 billion in damages on the U.S. economy. These costs were more than double the annual average of disaster-related costs during 1980–2024. As global temperatures continue to rise, so will the staggering human and economic price of climate-related disasters.

**Fearing Trump, Republicans voted to increase the impacts of global warming**

Accelerating the transition to clean energy will not immediately reverse the buildup of GHGs in the atmosphere and the related increase in extreme weather events. But a sustained commitment to replace fossil fuels with non-emitting energy sources will over time slow and potentially stop that buildup, moderating increases in destructive climate impacts.

The tax incentives and subsidies in the 2022 Inflation Reduction Act stimulated a surge in clean energy investment which, according to the Energy Information Agency, resulted in record levels of solar and battery installations and electric vehicle sales in the first

half of 2025. But as the Rhodium Group recently concluded, the Beautiful Bill's rollbacks of IRA provisions will reduce the build-out of new clean power generating capacity by 53–59 percent by 2035, putting more than \$500 billion of clean energy and transportation investment at risk.

Rhodium has calculated that the Trump bill will cause an increase in GHG emissions of 315–574 million metric tons in 2035 compared to the IRA baseline, slowing U.S. progress in reducing its carbon footprint and making it impossible to achieve the Biden administration's 2035 target of a 60–62 percent emissions decline from 2005 levels.

Many Republicans in Congress are concerned about the rise in extreme weather events, and some have acknowledged the connection between these events and climate change. But Republicans were silent about these issues during the debate on the Beautiful Bill and voted in lockstep for its passage after unsuccessfully trying to protect job-creating clean energy projects in their districts.

Why did Republicans acquiesce in

this reckless reversal of climate policies that were backed by years of scientific research and a global consensus in support of confronting the climate threat? The simple answer is fear of reprisals by President Trump. Since the beginning of his first term in 2017, Trump has disparaged climate concerns as the “New Green Scam” and is now relentlessly purging climate research and mitigation programs, and even any mention of global warming, from the work of federal agencies.

Leading Trump officials have railed against “climate change religion,” “climate fanaticism,” “the climate change alarm industry,” “woke chimeras of the Left,” and “exaggerated and implausible climate threats.” The president has called for the “dominance” of fossil fuels and attacked renewable energy as unreliable, unsightly, and damaging to the environment in its own right.

It is not surprising that the president's climate denialism, fossil fuel boosterism, and hatred of clean energy would translate into a wholesale repeal of the IRA incentives for low carbon technologies. It's also not surprising that, after regularly capitulating to Trump demands, Republicans who should know better would again be cowed into submission by their fear of a vengeful president. But in the end the One Big Beautiful Bill will be remembered as an unforced error of historic proportions that left the country more vulnerable to costly and life-threatening natural disasters like the tragic flooding in Kerr County, Texas.

## Intractable Policies Are Making Great Salt Lake Disappear

**W**hen Al Gore was still a senator, back in the early 1990s, he gave a talk to an ELI audience on the disappearance of the saline inland Aral Sea in the Soviet Union. It had shrunk by more than half its volume—an unfolding environmental disaster of epic proportions, the legacy of poor policy by post-war communist economic planners. These bureaucrats attempted to feed a hungry population by creating vast farms in what was then dry grassland by diverting water that normally would flow into the Aral, the world's third-largest lake. The new farms flourished, but the policy meant a unique saltwater ecosystem that sustained a vibrant marine economy both crashed. As the water level dropped, storms picked up salts from the dry seabed, dropping them on the region's irrigated farmland. (Nature can be ironic.) What remains today of the Aral is a few ponds in a salt-rimmed desert.

Sadly, it is time for America's economic planners—federal and state—to heed the lessons of this failure in our own domestic policies, because the western hemisphere's largest saline lake is drying up on our watch—Utah's Great Salt Lake—and for the same reason: policy that prioritizes unsustain-

able dryland farming using irrigation water drawn from rivers flowing into the lake. The lake has shrunk to 60 percent of its area and less than half its volume—and may disappear entirely by 2028 according to a study by Brigham Young University researchers. At risk are wildlife that depends on the lake, the health and livelihoods of Utah's citizenry—and the well-being of millions around the globe who benefit from the productions of a unique resource.

“About 800 square miles of lake bed sits exposed, baking in the desert heat, sometimes billowing toxic dust plumes across the state's urban core,” the *New York Times* reported in April. “What is at stake, [critics] warn, is a public health disaster, the collapse of an ecosystem that supports millions of migrating birds, and a devastating blow to the state's tourism, skiing, mining, and real estate industries.”

Additionally, Great Salt Lake—as does the Aral Sea, and smaller waterbodies drying up around the world—is contributing to climate change. According to the *Washington Post*, “Great Salt Lake released 4.1 million tons of carbon dioxide and other greenhouse gases in 2020, researchers found—more evidence that dried-out lakes are a significant source of emissions.”

The *Times* article too was concerned about not only regional but worldwide impacts. “The effects would reach far beyond Utah. Minerals from the lake are used in America's beverage cans and in fertilizer for much of the world's or-

ganic fruits and nuts. The lake's brine shrimp eggs support a global seafood industry. Dust laden with arsenic and other heavy metals could blow across other states.”

—White House Deputy Chief of Staff Stephen Miller in a press briefing on May 1

The results are not limited to environmental and economic effects, but financial as well, according to an article in the April/May *Environmental Law Reporter* by Utah-based academics Elisabeth Parker, Brigham Daniels, Abigail Allen, and Corinne Doerner. The article summary states that the lake's “environmental threats can translate into material financial risks for publicly traded companies and municipal bond issuers, potentially necessitating disclosure under existing securities law.”

The *Times* reporter interviewed an analyst from the Center for Biological

## A Former EPA Administrator Decries Abolition of Energy Star

I was there at the creation. The EPA created Energy Star in 1992 as a public-private partnership to provide builders, owners and renters with reliable information about the energy demand associated with their buildings, homes and appliances. . . .

The program costs

\$32 million in annual federal outlays to administer but has saved consumers \$200 billion in utility bills since 1992 — \$14 billion in 2024 alone. The averted air pollution, which was the EPA's initial objective, has been considerable, equivalent to the emissions of hundreds

of thousands of cars removed from the road.

Results like that ought to make a DOGE bro swoon. Why, then, does the Trump administration want to kill the program? It appears to be a case of mistaken identity. In its antipathy to climate activism, the EPA has taken an ax to that rare

government program embraced by both seller and buyer, builder and environmentalist, because everyone comes out ahead. How can so much winning be unwelcome within President Donald Trump's White House?

—Former EPA chief William K. Reilly in the *Washington Post*



Diversity, who told the newspaper that, according to his research, to preserve the lake all consumers of the river water flowing into it would have to cut their use in half—which he said was politically and economically impossible. The center has nonetheless sued the state under the Public Trust Doctrine because Utah hasn't succeeded in protecting the resource.

The 2023 Brigham Young report that put a five-year window till the end of a natural wonder had a similar cutback proposal. According to the *Post*, the study “calls on Utah and nearby states to curb water consumption by a third to a half, allowing 2.5 million acre feet of water to flow from streams and rivers directly into the lake for the next couple of years. Otherwise, it said, the Great Salt Lake is headed for irreversible collapse.”

As with the erstwhile Aral Sea, the elephant in the room for the Beehive State is the unsustainable withdrawals from the rivers and streams that feed Great Salt Lake. Their waters sustain a large and growing metropolitan area of more than 2.6 million people and a large agricultural sector. Also, as in the case of the Aral, the irrigated farmland is mostly used for growing a crop inappropriate for a dry climate, in this case water-thirsty alfalfa to feed cattle, most of which is exported.

“While climate change has contributed to extensive water shortages in the Southwest, the Great Salt Lake’s decline is mostly human-caused,” the *Times* report concludes. “Agriculture uses 71 percent of the water that would otherwise flow to the lake, and cities use around 17 percent.” Mining and other industries also use the rivers’ water.

The *Times* report notes, “For now, the lake’s 20-year decline has stabilized, although that has nothing to do with action by lawmakers. A recent year of record snow replenished mountain streams and reservoirs, allowing more water to flow to the Great Salt Lake.” This natural pause doesn’t obscure the long-term trend and the dire straits facing the state, its farmers, and its biggest urban area.

**H**ow did it get this way? Bad policy began well before Utah became a state. The federal Desert Land Act of 1877 encouraged farmers moving to the West to use river water to raise crops. Washington subsidized the building of transcontinental railroads through the dry plains and mountains, giving adjacent land to the rail companies to sell to farmers. Utah as did 16 other western states early on adopted a “prior appropriation” water doctrine—also called “first in time, first in right”—which gives rights mostly to farmers because they had claimed use of the water before municipal and other needs were significant.

For years now, a program allowing some leasing of these prior rights has been used to a limited extent, but this tool isn’t designed to preserve lake levels. In fact, the state program excludes using the leases for conservation purposes and merely allows rights to be traded among major users, chiefly cities and agriculture but local industry too.

Utah’s more recent response to the decline and threatened extinction has included programs that allow rights holders to voluntarily lease water back to nature, although the prior-appropriation system remains the underlying policy. These measures include the In-stream Flow Law expansion (2019) and the state’s new water banking legislation (2022), which have enabled reforms. While promising, these leasing efforts are still emerging and may not be large enough to halt the lake’s shrinkage. The amount of leased water currently reaching the lake is small compared to the overall volume being diverted.

A recent report called “Utah’s Moonshot: How Voluntary Water Leasing Can Help Restore Great Salt Lake,” by the libertarian Property and Environment Research Center, nonetheless attempts to “align[] incentives with conservation outcomes.” It tries to reverse the discouraging record of voluntary water leasing with a bunch of market-based legal reforms. But PERC holds out leasing as the only tool and avoids discussion of reforms to prior

appropriation or a reduction in the irrigated farmland—an area which is responsible, the report says, for 85 percent of the lake’s lost acreage.

Despite PERC’s optimism, the voluntary system will only work with huge funding to buy the valuable leases every year—and that money has to come from other water users, conservation groups, philanthropists, or taxpayers. “Moonshot,” whose name implies large dollars, concludes that dramatic action similar to the Apollo Program is required. But it warns that “no country has been able to save a saline lake.”

Indeed, money to buy enough leases to save the lake so far is not there. According to the *Times*, “Governor Spencer Cox requested \$16 million this year for the state to buy water leases for the lake, but lawmakers approved only \$1 million. The governor also sought \$650,000 to monitor and begin mitigating the lake bed’s dust. He got less than a quarter of that.”

For now, “The legislative and executive appetite to get water to the lake has absolutely evaporated,” said Ben Abbott, the Brigham Young University ecologist whose 2023 study made the prediction that the lake only had five years left. Although the state’s leaders have responded to the crisis, in his view it is not enough to save the resource.

The *ELR* authors also have dire conclusions: “It is increasingly clear that the policy tools currently available are insufficient to meet the challenge. While hope remains that the region will find the willingness to take the necessary steps, without drastic changes, failure seems just a matter of time.”

There are no easy solutions, as the farmers’ share might stand up against a legislative fix denying them what the courts might see as unassailable usufruct rights. Recognizing this, following a 2020 resolution, a legislatively formed stakeholder group concluded that a sustainable water-appropriation paradigm cannot be a zero-sum game. That may be the only observation on which all parties involved would agree.

*NOTICE & COMMENT is the editor’s column and represents his views.*

Data centers will use up to 12 percent of U.S. electricity by 2028 according to researchers. Photo from Shutterstock.





# Intelligence Report

*As AI expands its role in daily life, climate advocates have sounded the alarm on the technology's growing impacts on energy, water, and public health. Yet the public remains largely in the dark when it comes to understanding the full consequences of this boom*



**Akielly Hu** is contributing editor of the *Forum*. An environmental journalist, she previously served as a reporting fellow at *Grist* and as associate editor of the *Forum*.

IT'S HARD to believe that ChatGPT, the hugely popular AI chatbot, was launched less than three years ago. In a startling short span of time, OpenAI's DALL-E, Google's Gemini, Anthropic's Claude, and other AI tools have spurred new and pressing conversations around the role of technology in work, education, and daily life. Workers worry that AI will displace certain jobs, as companies begin hiring for AI-assisted positions. High school and college students now regularly use ChatGPT to take notes, complete problem sets, and write essays. The technology has even sparked debate in the realm of art, as painters and writers contemplate the consequences for their livelihoods of instant content generation.

Not everyone is happy about these developments. According to the law firm Baker & Hostetler, at least 12 U.S. lawsuits have been launched against AI firms for copyright infringement, as plaintiffs from the *New York Times* to Getty Images claim that large models trained on text and images from the Internet violate federal law. Others raise concerns about misinformation: AI tools are not designed to produce fact-checked, accurate content, and can even make up information that doesn't exist.

Climate advocates, meanwhile, have sounded the alarm on AI's unknown and growing environmental impacts. Utilities from Georgia to Texas are planning to build new natural gas power plants and keep aging coal plants online to feed energy

demand from data centers running AI models, threatening state climate targets. New infrastructure could strain water resources in drought-prone areas as banks of servers gobble more and more water for cooling. And while AI as a tool can serve environmental goals, such as optimizing solar power production and supercharging climate modelling, it can also aid oil and gas companies in fossil fuel extraction and production.

Clean energy experts and lawmakers have called for a range of policies to address these impacts, including requiring greater transparency from companies and even setting a moratorium on new data centers. Some researchers have said that much like the general hype around AI, the technology's environmental implications could potentially be overblown. In a recent report, analysts at the Bipartisan Policy Center wrote that factors like manufacturing capacity limits and the sustainability of generative AI business models could ultimately constrain future growth in the sector. In the near term, however, a major uptick in AI data centers seems certain. The Trump administration has made AI development a key policy priority, and tech companies have pledged hundreds of billions of dollars in AI investments over the next four years.

Yet the public remains largely in the dark when it comes to understanding the consequences of this boom. In the United States, tech companies aren't required to disclose how much energy and water data centers and the AI models they run actually

use, making the total environmental footprint of these new systems difficult to pin down. That has left advocates, academics, and regulators alike scrambling to understand this new technology — and figure out how to minimize its harms on the environment and communities.

**D**ESPITE ITS lofty name, there's no consensus on what the term "artificial intelligence" actually means. In February 2023, an attorney at the Federal Trade Commission wrote that AI is essentially "a marketing term" with "many possible definitions." Amba Kak, the executive director of the AI Now Institute, describes AI as algorithms that process large amounts of data, such as text and images, to generate predictions, scores, or rankings.

Algorithms vary in size and computational power, and it's the largest models, like ChatGPT, that have gained the most attention for gobbling up large amounts of power. Chatbots are a type of AI called large language models, which are trained on vast amounts of text data and predict the next word in a sequence based on the input they've received. Other such generative models that produce images or software code work similarly.

Developing such a complex model involves huge power inputs. The research institute Epoch AI estimated that one training run for the latest version of ChatGPT consumes enough electricity to power about 20,000 U.S. homes for one day. And once an AI tool goes online, even more power is needed to actually use it. The total amount of power usage is likely significant, given that ChatGPT alone boasts an estimated 300 million users per week.

For some businesses, AI has already driven a surge in greenhouse gas emissions. Last year, Google's annual sustainability report revealed that the company's carbon emissions had climbed nearly fifty percent over the past five years as a result of growing electricity consumption by data centers and supply chain emissions. Google stated that reaching its climate goal of net-zero emissions by 2030 could be difficult given "the uncertainty around the future environmental impact of AI, which is complex and difficult to predict."

A 2024 study by the Department of Energy's Lawrence Berkeley National Laboratory projected that data centers will use anywhere between 6.7 percent to 12 percent of total U.S. electricity by 2028, compared with 4.4 percent today. Climate advocates

worry that unrestrained AI growth will lead to widespread construction of fossil fuel plants to meet rising power demand from data centers. But the wide range presented by federal scientists underlines how quickly the field is evolving, and how unpredictable the future of AI sector growth remains.

It's important to understand that AI is only a subset of data centers, the category often used by policymakers when looking at future power demand, said Tanya Das, director of AI and energy technology policy at the Bipartisan Policy Center. Data centers also host websites, cloud storage, media streaming, and cryptocurrency mining, with AI making up only about ten percent of all facilities, Das said. When we talk about growing electricity use by data centers, "Some of it is driven by AI, but much of it is also driven by our larger reliance on digital services, and on the Internet and the cloud as a whole," she said.

In the past few years, alarming headlines about AI's skyrocketing electricity demand have abounded. But in a February report by Das's organization and the data firm Koomey Analytics, researchers cautioned that empirical data doesn't support this narrative, and that in fact the future of the AI sector is highly uncertain. One reason this idea has taken root is grid forecasts from "influential management consulting and investment advising firms," as the report puts it. Last November, for example, Boston Consulting Group said that data centers could use as much electricity as two-thirds of all U.S. households by 2030.

But Jonathan Koomey, one of the report authors, said to *Canary Media* that these forecasts tend to extrapolate recent growth rates into the future, which isn't necessarily accurate. Consulting firms could also be motivated to create hype in order to attract more business opportunities: "You get attention when you make aggressive forecasts," he said.

In reality, the future of AI power demand is far less straightforward, Das said. Although the United States is experiencing significant electricity demand growth for the first time in decades, multiple reasons are behind the spike. One is increased electrification in the transportation and building sectors, as consumers purchase electric vehicles and swap out gas furnaces for heat pumps. The growth of domestic manufacturing is another. Policies like the Inflation Reduction Act and the 2022 CHIPS Act created incentives for clean energy and semiconductor companies to move overseas factories back home. Climate change has also driven higher residential

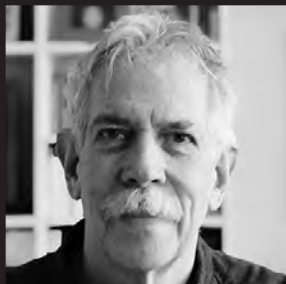


# Speed First, Safety Last, and More Energy

In May, OpenAI announced a \$6.5 billion investment in a startup called io, a partnership with the former Apple design guru Jonathan Ive to create what OpenAI's CEO, Sam Altman, termed "the next chapter in computing." More recently, a suit brought by the AI startup iYO attacked Altman and Ive for trademark infringement (a court hearing is set for October), but one has to assume the work to create a possible iPhone for artificial intelligence continues.

One might take issue with the rainbow colors that Ive thought up for the first iMac, but one thing Ive (and Apple) were good at was designing hardware that made human interactions with software intuitive, fun, and addictive. Meanwhile, at Google's recent annual schmoozefest, Google I/O, the company signaled that it would be putting AI into everything—and that Google wants to make AI invisible. Of course, this sounds a lot like Mark Weiser's 1991 prediction of 21st century computing: "The most profound technologies are those that disappear." If AI is in everything and accessible everywhere through a new generation of user-friendly hardware, what happens? What could go wrong?

We don't think much now about the energy, water, and other resource uses behind every AI query, but if AI becomes invisible and ubiquitous, we probably will not think at all. And these interactions will become exponentially more complex and likely more resource intensive, moving from text to image and video generation, and beyond. Alibaba just released Animate Anyone 2.1, an open-source video model capable of text-to-video and image-to-video generation. Google announced the release of their new Imagen 4 image generator and the new Veo 3



**David Rejeski**

Visiting Scholar  
Environmental Law Institute

*"If AI is in everything and accessible everywhere through a new generation of user-friendly hardware, what happens? What could go wrong?"*

video generator. We are moving into an era of AI agents, avatars, and "large reasoning" models—all of which will require more computing power.

We can see the outlines of this future, but the implications for the planet and our society are harder to discern. *MIT Technology Review* recently ran an in-depth series of articles on "Power Hungry: AI and Our Energy Future," covering the energy demands and carbon costs of the artificial intelligence revolution. During the report release on May 21, editor-in-chief Mat Honan lamented, "None of the companies we reached out to were willing to provide numbers during our reporting. Not one."

Why won't AI companies reveal their energy use? ChatGPT's answer: "The lack of transparency stems from a mix of competitive concerns, reputational risk, technical ambiguity, and regulatory caution; however, as public and governmental scrutiny increases, companies may eventually be pressured into more detailed disclosures."

But it is not clear the AI creators will suffer from more government scrutiny, especially in the United States, which leads in the tech for the moment. What they want from government was echoed in a recent

*Washington Post* piece: "AI Industry to Congress: We Need More Energy!" And, as Sergey Brin recently told Google staff working on AI: Speed at all costs; if a process is slowing you down, cut it; and forget safety—the future of AI belongs to those who let it run free.

The acres of servers, the 24/7 energy demands, the water and material resource flows into millions of servers and processors are there for a reason: to run models. These models are now accessing large swaths of humanity's collective knowledge—the good, the bad, and the ugly. They should obey Isaac Asimov's Zeroth Law of Robotics: "A robot may not harm humanity, or, through inaction, allow humanity to come to harm."

But what about AI models that are either launched without adequate safety controls (which many tech firms have relaxed) or can be modified through "jailbreaks" to produce harmful outputs? They could potentially provide answers to questions like these: How do I hide methane leaks from satellite detection? How can I best greenwash my firm's environmental record? Or they can write a scientific-sounding article that argues against regulating AI energy use. Such is our brave new world.

power use, as households crank up heating and cooling to cope with more extreme weather.

Das and fellow researchers estimate that data centers will constitute at most a quarter of new electricity demand by 2030, with those other sources making up the rest. For AI in particular, there are many unknown factors that will determine how much the sector will grow. One is the uncertainty of future demand for AI services. “The industry’s current growth projections are aggressive, but whether they materialize depends on businesses realizing positive economic returns from AI investments and on whether users’ concerns about accuracy and reliability can be adequately addressed,” wrote the authors of the Bipartisan Policy Center report.

Another factor is potential supply chain constraints. Data centers require chips, servers, and other equipment like backup power generators. The speed of data center buildout depends on the manufacturing capacity of a handful of companies, Das said. Nvidia, the world’s primary provider of AI hardware, for example, mostly relies on a single semiconductor manufacturer in Taiwan. Yet another unknown is advances in computing efficiency. Historically, computing systems become more and more energy efficient as technology progresses, and the same has already begun to happen with AI.

The anxiety around AI reminds Das of outlandish narratives during the dot-com boom that the Internet would eventually use up half of all global electricity. “I think we’re in a similar moment right now, where there are some alarmist projections being made,” she said. “But in all likelihood, I think this is going to be a really manageable level of [electricity] load growth.”

**A**T THE local level, however, AI is already having major impacts on the communities living near data centers. The facilities are concentrated in a growing number of hotspots across the country, including Virginia, Texas, and Georgia. Ohio, Iowa, Arizona, Indiana, and Nevada have also seen a spike in data center proposals since January 2023. A 30-square mile area in Loudoun County, Virginia, known as “Data Center Alley” is home to the world’s biggest concentration of servers, with more than 200 structures consuming roughly the same amount of electricity as the city of Boston, according to Reuters. In 2023, data centers used around a quarter of Virginia’s electricity.

Some tech companies intend to power new data centers with zero-emission technology. Microsoft, Google, and Amazon, for example, have struck deals to operate some of their data centers with nuclear power. But other firms have embraced natural gas. Last December, Meta announced a \$10 billion AI data center in northeast Louisiana that will be powered with new gas generation, although the company pledged to use more renewable energy later on. In Memphis, environmental groups have decried the use of on-site gas turbines to power a data center run by xAI, a company founded by Elon Musk.

Climate advocates worry that utilities preparing for a wave of new data centers will build gas plants that lock in decades of greenhouse gas emissions and air pollution risks—regardless of how much the AI sector ends up expanding. Utilities receiving proposals for data centers have already vastly increased forecasts for how much power they’ll need to provide in the coming years. In January, a report by the consultancy group Grid Strategies found that, in the past two years, utilities have upped their load-growth forecasts for the next five years by nearly five times, in response to new data center proposals as well as manufacturing.

Meeting that power demand will almost certainly require building new gas generation. Across the country, utilities are planning to build or extend the life of nearly 20 gigawatts of gas power plants, according to *Canary Media*. But tech companies, looking for the best deal, often submit duplicate data center proposals to multiple utilities. Only a fraction of those facilities will ultimately get built, meaning utilities are likely planning for more power capacity than they’ll end up needing. “The data center people are shopping these projects around, and maybe they approach five or more utilities. They’re only going to build one data center,” Koomey told *Canary Media*. “But if all five utilities think that interest is going to lead to a data center, they’re going to build way more capacity than is needed.”

Despite potentially inflated forecasts, gas expansion to serve data centers is already underway. According to a January report by the Center for Biological Diversity, six major utilities from California to the Carolinas are planning to build at least 22 gas projects through 2033, in part to power new data centers. Georgia is one of several states that has experienced recent growth in electricity use. In 2023, Georgia Power, the state’s largest utility, substantially increased projections of energy demand, forecasting a growth of about 75 percent in total electricity gen-

# My Footprint “a Double-Edged Algorithm”

To environmental professionals, the promise of artificial intelligence is both tantalizing and troubling. At its best, AI is a powerful tool for tackling climate change, optimizing resource use, and enhancing environmental monitoring. At its worst, it threatens to accelerate ecological degradation, driven by its appetite for energy and rare resources. The environmental community must confront this paradox with nuance, scrutiny, and a willingness to shape the trajectory of this technology before it outpaces our ability to regulate its impact.

The case for AI as a force for environmental good is compelling. Machine learning models are already used to forecast extreme weather, map deforestation in real time, and track wildlife migrations with unprecedented accuracy. Precision agriculture, powered by AI, is helping farmers reduce pesticide and water use, tailoring interventions to the needs of each plot. In cities, AI systems optimize traffic flow and energy consumption, contributing to emissions reductions. Conservationists have used AI to detect illegal logging in the Amazon within hours. Similar tools in the energy sector have led to efficiency gains in demand forecasting and grid management.

Yet this optimism is tempered by the environmental costs of developing and deploying AI. Training a single large language model can emit as much carbon as five cars over their lifetimes. Data centers—the core of AI—consume vast amounts of electricity and water. With global AI usage accelerating, demand for data storage and processing power is projected to skyrocket. Some estimates suggest AI and related digital technologies could account for up to 8 percent of global electricity use by



ChatGPT

*ELI does not use AI-generated material in any of its publications, but here for educational purposes we ask an online bot to “write a 600-word article in the style of a newspaper op-ed, addressed to environmental professionals, assessing the environmental pros and cons of AI”*

2030. This trajectory is unsustainable without major improvements in energy efficiency or a rapid shift to renewable power.

The hardware side of AI adds more concerns. Manufacturing high-performance computing chips depends on rare earth elements and minerals often extracted under environmentally and socially harmful conditions. These supply chains are opaque, with mining operations linked to deforestation, water contamination, and exploitative labor. The environmental cost of AI is not just in carbon—it’s embedded in the silicon and metal of the devices themselves.

Moreover, AI systems can entrench unsustainable practices when aligned with the wrong incentives. Consider AI’s use in fast fashion logistics or high-frequency trading—applications that may optimize profits, not sustainability. When AI accelerates consumption instead of curbing it, it becomes a tool for ecological harm. This reflects a deeper issue: AI mirrors the priorities of those who build it. Without deliberate environmental governance, its benefits will be uneven and its harms significant.

There’s also the issue of equity. Many environmental benefits of

AI—like predictive climate modeling or optimized resource use—are concentrated in wealthier regions with access to infrastructure and expertise. Meanwhile, communities on the front lines of degradation may bear the brunt of the extraction and energy demands AI requires. If unmanaged, AI risks deepening global environmental divides.

Environmental professionals are uniquely positioned to influence how AI is developed and used. This begins with advocating for transparency: we must demand clear reporting from tech companies on the energy and material footprints of AI systems. It continues with cross-sector collaboration to ensure environmental criteria are built into AI tools. And it requires a shift in mindset: AI should be seen not as a neutral instrument, but as a system shaped by values, incentives, and choices.

The environmental movement has long championed technologies that align with ecological boundaries and social justice. Artificial intelligence is no exception. It can be a powerful ally in the fight for a livable planet, but only if we insist on accountability, sustainability, and inclusivity at every stage of its development.

eration by 2033. As a result, Georgia Power is “fast-tracking the construction of three new methane and oil-burning units at Plant Yates and delaying the closure of two of its coal-fired units, Plants Bowen and Scherer, from 2027 to 2035,” according to the CBD.

New gas plants could disproportionately harm low-income communities and communities of color already overburdened with pollution. In South Carolina, reporting by *Capital B News* revealed that data center proposals would reopen at least two power plants in rural Black communities. The majority of the state’s power plants are located in areas with an above-average percentage of Black residents. Discounted utility rates for data centers also mean that local residents will end up footing the bill for those new power plants, *Capital B News* found.

Experts warn that an unrestrained buildout of data centers could conflict with statutory climate goals. A Virginia state report from December found that data centers could double the state’s power consumption by 2033 and nearly triple it by 2040. The utility Dominion Energy has proposed building 5.9 gigawatts of new gas plants in Virginia by 2039, which could jeopardize the state’s commitment to achieve 100 percent carbon-free electricity by 2050. Last July, an investigation by the *Seattle Times* and *ProPublica* found that Washington state’s tax incentives for data centers had encouraged a spike in energy demand that threatened its goal to reach carbon-neutral electricity by 2030.

**D**ATA CENTER servers generate a lot of heat, and one of the most efficient ways to cool them is by using water. Researchers at the Lawrence Berkeley National Laboratory estimate that data centers consumed 66 billion liters of water in 2023. By 2028, that amount could double—or even quadruple. Most of the water used by data centers evaporates, displacing water from the local sources it came from. That poses serious problems in regions that already face water shortages, says Shaolei Ren, an associate professor of electrical and computer engineering at the University of California, Riverside,

who studies the environmental impacts of AI. In places where water is scarce, like Arizona or Chile, data centers end up competing with households and farms for the resource. As companies flock to areas with cheap land, the problems could get worse. A May investigation by *Bloomberg News* found that roughly two-thirds of new data centers built or in development since 2022 are located in areas experiencing water stress.

AI’s water footprint is just as murky as its energy consumption, and in many instances, residents have a difficult time obtaining accurate information about their local data centers. In 2022, after a legal battle between the *Oregonian* newspaper and the city of The Dalles, residents there learned that Google’s data centers had grown to the point that they constituted 29 percent of the town’s total water consumption. The Oregon city, with a population of 16,000, had been experiencing drought for years.

In 2023, Ren and fellow researchers estimated that global AI demand would account for 4.2 to 6.6 billion cubic meters of water consumption in 2027—equal to the total annual water use of Denmark four to six times over. He has also examined the water usage of individual AI models. Last year, Ren’s team calculated how much water OpenAI’s ChatGPT-4 model used for a standard query. They found that generating a 100-word email using ChatGPT required a little more than a bottle of water. If 10 percent of working Americans did that once weekly for a year, the total water consumption would equal the amount used by all Rhode Island households for 1.5 days.

Ren’s team also ran the numbers for ChatGPT-4’s power use, finding that generating a 100-word email uses the equivalent of 14 LED light bulbs for one hour. If 10 percent of all working Americans generate a 100-word email once weekly for a year, that adds up to more than 121,000 megawatt-hours of electricity—equal to the power used by all households in Washington, D.C., for 20 days.

Ren is confident in these estimates, in part because his team cross-checked their numbers with research published by Microsoft, a major investor in OpenAI. But in general, research on AI’s energy consumption can still end up far from reality because the public

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knows little about how exactly models are designed and used in real life, he said. Companies, for example, have to ensure that these models are responding to users almost instantaneously, which could pose even higher water and energy requirements.

AI's environmental harms extend far beyond water and energy use. Data centers also add to air pollution because they rely on diesel-guzzling backup generators, which ensure that they can keep running in the case of a power outage. Although in theory, facilities only rarely turn these on, diesel generators still emit a substantial amount of pollution: "A typical diesel generator can release 200 to 600 times more [nitrogen oxide emissions] than a natural gas power plant producing the same amount of electricity," wrote Ren and Caltech professor Adam Wierman in a recent blog. Gas plants that power some data centers, meanwhile, also release harmful air pollutants, including fine particulate matter and nitrogen oxides. A study by Ren and Wierman found that in 2023, air pollution attributed to data centers accounted for about \$6 billion in public health damages in the United States. "This is well recognized in the public health community, but it seems that it's not being recognized in the tech industry yet," said Ren.

**I**N RECENT YEARS, state lawmakers have led a push to require greater transparency from AI companies and establish minimum clean energy requirements for data centers. In February, in response to the *Seattle Times* and *ProPublica* investigation mentioned earlier, Washington governor Bob Ferguson signed an executive order to launch a study on the impact of data centers on energy use and state tax revenue. Legislators in Virginia introduced more than a dozen bills to address concerns around data centers' energy and water use this year, although none succeeded. In Connecticut, lawmakers have put forth a bill that would require data centers to run on at least 50 percent renewable energy.

In New York, a new bill would require data centers to submit annual reports on their energy use and other impacts and use 100 percent renewable energy by 2040. Policymakers have also taken action at the

federal level by introducing a bill last year that would mandate a study of AI's environmental impacts. In Indiana, some advocates have pushed for a moratorium on new data centers until their impacts on residents are better understood. Policy innovators in the United States could also learn from actions taken abroad: *Bloomberg News* reported in mid-May that the European Union will propose a measure by the end of 2026 to curb water use in data centers.

But even in the absence of strong regulation, gas and electric companies and public utility commissions can still take commonsense measures to address the environmental implications of AI. Facing an influx of duplicate data center proposals, utilities in places like Georgia have started taking steps to more accurately predict power demand, such as assigning probabilities to projects at different stages of development. "We're seeing utilities start to get smarter on this issue and present more accurate proposals to their state public utility commissions," Das says. "We're trying to encourage public utility commissions to take a measured approach to viewing these proposals."

Tech companies, for their part, can also take charge by scrutinizing their utilities' decarbonization plans, committing to sourcing clean energy for data centers, and using batteries rather than diesel generators for backup power. Sierra Club advocates wrote in a report last year. They can also work with utilities to push for more aggressive climate action. "Large customers are often influential stakeholders with decisionmakers," the authors wrote. "Large customers' voices are needed to push utilities toward a system-wide transition to clean energy."

Policymakers can also take steps to wield AI as a tool for furthering climate goals while addressing more immediate concerns posed by the impending build-out of data centers. AI has helped scientists manage power grids to conserve energy, provide more accurate weather forecasts, and improve cooling efficiency at data centers. Or as Representative Don Beyer (D-VA) says, "While recognizing the ways AI can help us decrease emissions in other sectors and develop innovative climate solutions, we need to ensure we are being responsible with the adverse impacts it may have on our environment now." 🌱

***If 10 percent of all working Americans generated a 100-word email once weekly for a year, that energy could instead power D.C. for 20 days***

# From Deference to Deliberation

*With less room to interpret ambiguous laws after the demise of the Chevron precedent, agencies must now work within narrow legal boundaries. Further, statutory meaning may come to be shaped by judicial reasoning rather than regulatory interpretation*



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IN THE summer of 2024, the Supreme Court issued its decision in *Loper Bright Enterprises v. Raimondo*, a case that may well reshape the landscape of federal regulation for decades to come. By overruling *Chevron* deference, the long-standing principle—named for the precedent-setting 1984 case—that courts should bow to reasonable agency interpretations of ambiguous statutes, *Loper Bright* has fundamentally changed the relationship between the branches of government. Where agencies like EPA once had considerable latitude to interpret scientific and technical language in the laws they implement and enforce, courts now seem to have to make such determinations as “questions of law,” usually the province of a judge. It is not yet possible to catalogue all the impacts that *Loper Bright* will have on administrative agencies, but one early lesson seems to be that they will need to be more exacting in their definition and use of key terms. In other words, the power to regulate now comes with the burden to clarify.

The balance between providing clear definitions on the one hand and on the other preserving agency discretion has for some time been a contentious issue for lawmakers, regulators, industry, and the public. These two approaches offer distinct advantages and challenges, which impact both the efficiency of governance and the trust the public and industry place in agencies responsible for regulations. Proponents of clear definitions point out that one of their key advantages is the ability to provide consistency and predictability in regulatory frameworks. By establishing clean boundaries and specific guidelines, precise definitions make it less burdensome for agencies to apply regulations uniformly. Uniformity reduces the potential for confusion or bias, which can help to build trust in agency leadership.

Furthermore, clear definitions often lead to more efficient decisionmaking because both regulatory bodies and businesses have a better understanding of what is required. Those who advocate for flexible definitions argue that rigidity oversimplifies complex issues, particularly in environmental policy or health and safety, which require nuance and flexibility. They argue that strict, one-size-fits-all definitions fail to address the variability and nuance of real-world situations. Balancing the legal clarity needed for effective enforcement with the uncertainties inherent in scientific research remains a challenge. New scientific discoveries can shift the assessment of risks. In regulatory contexts, this dynamic creates significant challenges for agencies that base decisions on the best available information.





**F**OR DECADES, the scope of judicial deference afforded to federal agencies by federal courts has evolved, as shown by a trio of administrative law doctrines: In *Skidmore v. Swift & Co.* (1944), the Supreme Court established that an agency's interpretation of a statute may be entitled to respect—but not binding deference. Courts were to consider factors such as the agency's reasoning, consistency, and specialized experience—the so-called “power to persuade.” This ruling reflects a functional respect for agency expertise but leaves ultimate interpretive authority to the judiciary.

Forty years later, *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, altered the *Skidmore* standard of review by introducing a two-step test. Under *Chevron*, a court would first identify whether the statutory language is unambiguous. If the statute was clear, the court would stop there and apply that meaning. However, if the statute was ambiguous, then the court would determine whether the agency's interpretation was “permissible.” As long as the interpretation was not arbitrary or contrary to the statute, the regulation would pass the *Chevron* test. This doctrine recognized that agencies, not courts, are better positioned to make policy judgments when there were statutory gaps, particularly if technical, scientific, or economic expertise was required. *Chevron* became a cornerstone of modern administrative law and, for the past 40 years, had provided agencies with significant leeway to implement broad and ambiguous statutory language.

Now, in *Loper Bright*, the Supreme Court has decisively rejected *Chevron*. The *Loper Bright* majority asserted that the 1984 precedent violated the separation of powers by allowing agencies to effectively determine the meaning of law when the statute is ambiguous. The Court said that questions of law are “emphatically the province and duty of the judiciary.” Under *Loper Bright*, courts are now required to independently interpret ambiguous statutory language. The ruling does not abolish agency discretion for questions of *fact*, but it does make clear that *legal* ambiguity is not an opportunity for agencies to make policy decisions.

Importantly, *Loper Bright* did not overturn *Skidmore*. Agencies may still receive respect from courts if their interpretations are well-reasoned and grounded in expertise. But *Skidmore* deference is discretionary, context-specific, and, some have argued, lacks the doctrinal clarity that *Chevron* once provided. Laws are often written with purposeful flexibility—sometimes to secure bipartisan support, sometimes to allow for evolving science, but perhaps most often because the problems they address are complex. In scientific and technical areas where Congress has historically left statutory terms purposefully vague, *Loper Bright* places

agencies on unsettled ground. Judges, many of whom lack technical training, now serve as the primary arbiters of statutory terms and concepts that demand technical judgment.

For decades, EPA has used what might be seen as “strategic ambiguity” to assist in its implementation of statutes and regulations, and to fulfill its mission. The agency interpreted its statutory language in ways that allowed it to address emerging threats without waiting for Congress to rewrite environmental laws or to pass new ones. In many cases, this approach was not just a matter of administrative convenience but deemed essential to the agency's ability to protect public health and the environment in real time. When new environmental challenges arose—such as greenhouse gas emissions, endocrine-disrupting chemicals, biotechnology, or novel industrial byproducts—EPA often interpreted existing statutory authorities to respond to such problems.

The agency often leaned on expert judgment to navigate the vague language in laws. The Clean Air Act contains terms like “adequate margin of safety” or “ requisite to protect public welfare,” which aren't clearly defined. However, these words are key to establishing air quality standards. Similar situations have been the subject of lawsuits, but after *Loper Bright*, legal watchers have observed a spike in new legal challenges despite this Court's insistence that “mere reliance on *Chevron* cannot constitute a special justification for overruling such a holding.” While *Loper Bright* didn't start this wave of litigation, it has clearly added momentum.

For decades, courts have been asked to review how EPA and other agencies interpret terms embedded in statutes. When Congress enacted the Toxic Substances Control Act in 1976, it gave EPA the authority to regulate chemicals that pose an “unreasonable risk of injury to health or the environment,” yet Congress did not define what constitutes an “unreasonable risk.” In *Corrosion Proof Fittings v. EPA* (1991), an appeals court struck down the agency's attempt to ban asbestos under TSCA. The Fifth Circuit found that EPA failed to demonstrate that its regulatory ban was the “least burdensome” method of addressing the “unreasonable risk” posed. In doing so, this court interpreted TSCA's language to require a higher evidentiary bar, and limited the agency's ability to ban existing chemicals.

To address issues in TSCA, including the interpretation of “unreasonable risk,” Congress passed the Frank R. Lautenberg Chemical Safety for the 21st Century Act in 2016. This was the first major update to TSCA in 40 years and was an attempt to improve the transparency and accountability of EPA's chemical safety evaluation process. Although the Lautenberg Act was hailed as a bipartisan victory for public health, its language reflects the very compromises that often lead to



# Agencies Can Still Win Environmental Cases

To be sure, *Loper Bright v. Raimondo* is a seminal decision that has had a cascading effect on judicial decisionmaking at all levels. Since the ruling of the Court last summer, the decision has begun to cement itself as a piece of foundational case law, being heavily cited by the Supreme Court and federal circuit courts alike. Nonetheless, the likelihood of the downfall of *Chevron v. NRDC*, the 1984 case struck down by *Loper Bright*, has been lurking on court walls for years. As noted by Chief Justice Roberts in the new decision, the Court had not cited the *Chevron* precedent since 2016. Scholars and justices alike had noticed the shift by the Court to move away from the deferential standard of the 1984 case. Professor Bob Percival had characterized *Chevron* as a “dead man walking” prior to the *Loper Bright* decision, while Justice Gorsuch referred to the *Loper Bright* holding as placing a “tombstone” on the long dead 1984 precedent.

Although *Chevron* is dead, its shadow will still influence decisions, and some forms of deference are still emerging. First, Justice Kavanaugh, in the recent unanimous opinion for *Seven Counties Infrastructure Coalition v. Eagle County* (2025), made it clear that “when determining whether an agency’s [environmental impact statement] complied with NEPA, a court should afford substantial deference to the agency.” Second, agencies may still be entitled to *Skidmore* deference, named for the 1944 decision that highlights the persuasiveness of an agency’s reasoning. The *Loper Bright* majority favorably cited *Skidmore* eight times in its opinion. Since *Loper Bright*, the 80-year-old holding has been used in finding for the government in a number of cases. As examples, here are three



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*“Rather than viewing Loper Bright as a kill switch for agency deference, it may be more helpful to view the ruling as more of a greenlight for creativity and expert analysis of all types”*

2024 decisions from federal courts around the country: *Harding v. Steak N Shake, Inc.*; *Green v. Perry’s Restaurants Ltd.*; *Lopez v. Garland*.

What is new after the advent of *Loper Bright* is the Court signaling that it is open to expertise from any relevant source, not just the opinion of expert agencies. Amicus briefs, therefore, can be important. For instance, in the recent decision for *City & County of San Francisco v. EPA*, not only does the majority refer to multiple amicus briefs, but it found that the lack of supporting amicus briefs for a contention of the agency weighed in the favor of the petitioner. Additionally, with the premium placed on the adequacy of the administrative record in *Ohio v. EPA* (2024), expert analysis can be placed in the record by non-government entities during the required notice-and-comment process to then be considered by reviewing courts.

Finally, *Loper Bright* is not the only show in town when analyzing a statute. In *West Virginia v. EPA* (2022), the Supreme Court breathed new life in articulating the “major question doctrine.” That doctrine is now the new “step zero” in a *Loper Bright* analysis. This new preliminary plays well with the resurgence of the deferential stan-

dard of *Skidmore*, particularly when the agency is acting “in its own lane,” that is, acting within its own jurisdiction, where its expertise is the most compelling. Additionally, canons of interpretation have always been used by the Court, as stated by the chief justice in *West Virginia v. EPA* (2022) but are now even more important to resolve statutory ambiguity. See for instance, Justice Alito’s opinion in *Sackett v. EPA* when he opined that the Court “require[s] Congress to enact exceedingly clear language if it wishes to significantly alter the balance between federal and state power and the power of the government over private property.” This is despite the antithetical nature of these canons to a fundamentally textualist Court.

Emerging in the wake of the death of *Chevron* is a scheme of deference and review slowly unfolding. Rather than viewing *Loper Bright* as a kill switch for agency deference, it may be more helpful to view the ruling as more of a greenlight for creativity and expert analysis of all types.

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statutory ambiguity and court cases that result. Lawmakers sought to preserve agency flexibility while also imposing clearer requirements for transparency and consistency. As a result, the revised TSCA contains both mandatory procedural elements and open-ended terms that still require expert interpretation.

For example, the Lautenberg Act seeks to correct many of TSCA's earlier shortcomings by removing the "least burdensome" language and mandating that EPA evaluate chemical safety without considering costs in its initial risk determinations. Yet the term "unreasonable risk" remains undefined—even though this was the term at issue in *Corrosion Proof Fittings*. Further, the Lautenberg Act now directs EPA to consider "susceptible subpopulations" and to base decisions on "the weight of the scientific evidence," but this language did not directly fix the issues raised in earlier litigation in the area. Instead, Congress left considerable room for interpretation about how to implement these requirements, weigh different types of data, address scientific uncertainty, and define what level of risk is acceptable. The Lautenberg Act may provide stronger legal grounding for regulatory decisions that err on the side of caution, but it also invites litigation over the methodological details that remain imprecisely defined.

**C**ONSIDER another example under the new TSCA. To modernize toxicity testing and reduce animal use, TSCA Section 4(h)(2)(C) mandates the agency "reduce and replace animal testing" and promotes the use of scientifically reliable alternatives, often referred to as New Approach Methodologies. If challenged in court, EPA could face regulatory whiplash. On one hand, this section of TSCA encourages innovation in toxicity testing. On the other, EPA's decisions to use NAMs can be second-guessed by courts unfamiliar with emerging technologies. The application of *Loper Bright* likely means that courts must make their own determinations about whether novel scientific approaches meet statutory requirements, and can thus bypass an agency's technical rationale. As agencies continue to advance and validate scientifically sophisticated tools, they must also navigate the growing tension between innovation and legal risk.

However, while *Loper Bright* has sharpened the legal consequences of statutory ambiguity, litigation over vague definitions is nothing new. In *Entergy Corp. v. Riverkeeper, Inc.* (2009), the Supreme Court tackled the meaning of the Clean Water Act's requirement that facilities use the "best technology available" to minimize environmental harm from cooling water intake structures. EPA had interpreted the statute to allow consideration of cost-benefit analysis when se-

lecting technology for existing facilities. Environmental groups challenged this interpretation, arguing the statute required the most environmentally effective technology regardless of cost. The Court ruled with EPA, holding that the statute did not unambiguously prohibit cost considerations and that the agency's interpretation was permissible under *Chevron*. This case exemplifies how the 1984 precedent allowed agencies to fill in gaps in ambiguous statutes where Congress left terms like "best" undefined. It also underscores how courts historically applied the judicial standard to agencies' technical judgment, particularly in the face of complex scientific and economic trade offs.

However, judicial skepticism of agency interpretations did exist prior to *Loper Bright*. In *Sackett v. EPA* (2023), the Supreme Court narrowed EPA's authority under the Clean Water Act by rejecting the agency's interpretation of what qualifies as federally protected wetlands. While not a *Chevron* case, it was fundamentally about competing definitions. The agency offered one definition, rooted in scientific expertise, while the Court adopted another, grounded in its interpretation of the statutory text. These cases illustrate two different judicial approaches to statutory ambiguity. In *Entergy*, the Court accepted that ambiguity invited agency discretion. In *Sackett*, that ambiguity was fixed by the justices. The *Loper Bright* decision formalizes this shift and places regulators like EPA in a more precarious legal position. If ambiguity is an increasing liability, clarity must become a core objective.

Agencies must now anticipate legal scrutiny not just of their conclusions, but of the scientific methods they used to reach them. Every definition, assumption, and inference must be backed by robust legal and scientific justification. Shifting interpretive authority toward the judiciary raises important questions about institutional competency. Judicial control over statutory interpretation may lead to less adaptive regulatory outcomes. While judges have the discretion to consult with experts, in litigation complex technical debates are often captured simplistically as binary legal arguments.

As a result, this new era in regulatory science places increased emphasis on the legal distinction between questions of law and questions of fact, as well as their overlap. In parsing this distinction, it is useful to consider that a question of law concerns how a statute should be interpreted or applied while a question of fact involves a determination about what happened or what the evidence shows. In litigation, the judge determines questions of law. Questions of fact are determined either by a jury or, in a bench trial, by the judge. Given the change in direction that *Loper Bright* has created, courts are now faced with the task of distinguishing between these two questions. It might be especially challenging to address mixed scientific/legal determi-

# Making a Series of Rebuttable Presumptions

Statutory construction has always been a bit of an adventure. Even if we are all textualists now, myriad tools and canons guide meaning. There is no single path through the thicket. Consider the Supreme Court's latest round of environmental decisions. Everything from common sense to dictionaries, pre-enactment history to ill-defined context, informs the Court's reading of bedrock environmental statutes. Reaching consensus on a single best reading is challenging. And yet, using independent judgment to determine the single best reading of a statute is exactly what *Loper Bright* instructs lower courts to do.

So what happens when this decision leaves statutory interpretations open to ad hoc approaches by individual jurists? Is environmental law doomed to fluctuate with the sensibilities of different jurists—or can it be independently stabilized?

I suggest environmental law can be made secure with a series of rebuttable presumptions. Those would reflect the protectionist and precautionary nature of environmental law's foundational statutes. Being rebuttable, the presumptions could be set aside if they produced counter-textual conclusions in any given case. I have two in mind.

First: The protective purpose and precautionary nature of environmental law is part of the indispensable context of these statutes and was fixed at the time of enactment. The best reading of an environmental law, therefore, will presumptively favor those interpretations that are more protective of human health and the environment and allow for such protection in the face of scientific uncertainty. Similarly, interpretations that facilitate regulatory backsliding and deregulatory positions should presumptively be disfavored.

Second: The major questions



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*"The best reading of an environmental law will presumptively favor those interpretations that are more protective of human health and the environment and allow for such protection in the face of scientific uncertainty"*

doctrine presumptively does not produce the best reading of the statute. The deregulatory impulses driving this new doctrine are fundamentally at odds with the regulatory commands of environmental law. Regulation is a feature, not a bug, of environmental law. Absent truly extraordinary cases, therefore, the doctrine should be disfavored.

There are reasons to develop such presumptions even if they can be similarly arrived at through the ad hoc examination of individual statutes. One reason is to temper ideology. In the *Loper Bright* briefing, scholars and interested parties argued that *Chevron*, the 1984 precedent at issue, should be spared in part because it tempered ideologically motivated decisions by individual jurists. With *Chevron* gone, courts need a replacement mechanism to serve that function.

Another reason is to enhance consistency. With the 1984 precedent nullified, there is greater risk that ad hoc interpretations, even if individually defensible, collectively create an undesirable patchwork of regulatory commands. Tethering statutory construction in environmental law to a common set of presumptions increases the likelihood of a shared and consistent set of interpretations.

Ultimately, the idea is to reduce the noise that administrative law's flux creates in environmental review. In the past, that flux has allowed courts to undermine environmental policy by allowing decisions to elevate administrative law values over environmental law values.

In the future, without the safety net of *Chevron* deference and allowing multiple reasonable interpretations permissible in the face of ambiguity, courts will need to be even more mindful of developing administrative law doctrines in a way that gives deliberate space to codified norms. Even though Congress technically can override judicial errors in statutory interpretation, the difficulty in passing legislation means the momentum is with the status quo. It would be naïve to say that interpretive errors could be undone by Congress as easily as they could be made by the judiciary.

For courts, all this means to serve as faithful agents, to cut through the noise, environmental law would benefit from some mechanism to anchor and guide the substance of their interpretations. Rebuttable presumptions could provide some much-needed anchors by providing jurists with sensible, textually defensible starting points.

nations, especially if courts classify them as questions of law subject to *de novo* review (without deference to the lower court ruling). If every use of expert discretion is vulnerable to being recast as a question of law, agencies will probably face a very high hurdle when implementing statutes that contain broad mandates to protect public health.

**E**FFORTS TO reinstate broad agency deference are unlikely to find a sympathetic audience in the courts. *Loper Bright* reflects a broader skepticism toward permitting agencies to define the scope of their own power. While courts have long accepted that agencies possess institutional expertise in complex regulatory arenas, the new judicial approach would seem to elevate statutory clarity over administrative flexibility. However, Congress does retain the authority to clarify the scope of agency discretion through statutory amendments. In theory, this could involve updating statutes to explicitly delegate interpretive authority to the relevant agency, or to provide more detailed definitions of ambiguous terms. This language would reinforce the agency's ability to implement technically complex programs in a manner consistent with legislative intent. However, legislative solutions like that are not easy to achieve, as demonstrated by the 2016 amendments to TSCA discussed earlier. Also, they might raise other legal issues, such as the high court's non-delegation doctrine. In addition, any effort to revise foundational regulatory laws is likely to become entangled in broader debates about the size and role of the administrative state. Attempts to legislatively mandate agency deference could be interpreted as attempts to expand federal regulatory power, triggering partisan opposition. Procedurally, securing the bipartisan consensus required to make these changes could prove difficult in the current political climate.

One of the enduring challenges in relying on Congress to clarify statutory ambiguities is the increasing difficulty within the legislative branch of preparing and enacting tightly drafted laws. Congress often prefers to leave the details of implementation to agencies precisely because it allows lawmakers to avoid difficult political choices. Vague statutory language can be designed to secure a

broad coalition or punt contentious decisions to administrative experts. In this sense, *Chevron* deference functioned as a release valve for legislators. *Loper Bright* can be seen as eliminating that mechanism. The incentives in Congress to maintain strategic ambiguity remain strong, especially in politically charged policy areas.

There is also a danger that Congress might overcorrect and draft excessively rigid statutes that limit agency flexibility in ways that would hinder the implementation of the law in question. In highly technical domains, such as environmental regulation, detailed statutory prescriptions are at risk of becoming obsolete as science and society change. A statute that specifies precise exposure thresholds or prescriptive methodologies

could preclude the incorporation of scientific advances. One potential solution is for Congress to include dynamic regulatory mechanisms such as review clauses or explicit scientific reevaluation triggers that preserve flexibility while still providing clear guardrails. However, designing such legislation is not a simple task, and could require a level of technical understanding and political coordination that is not always available.

Furthermore, there are legal complexities that would affect congressional efforts to reaffirm

agency authority. While Congress can delegate interpretive responsibilities to agencies, the delegation must be made in a way that does not run afoul of the Constitution. The non-delegation doctrine prohibits Congress from transferring its core legislative powers to another branch without providing an "intelligible principle" to guide the exercise of that authority. The doctrine can be seen as a potential constraint on broad agency discretion. Statutory amendments that attempt to restore interpretive flexibility could lead to litigation.

Regardless of one's perspective on this change in delegation, agencies must now adapt to a legal landscape where regulatory clarity is more important than ever. The preferable strategy for agencies points toward embracing clearer definitions and more precise rulemaking. Agencies must strengthen the transparency, precision, and defensibility of their rulemakings within the bounds of their existing authority. They can take steps to ensure that their rules withstand judicial scrutiny, and in doing so, they may create benefits for a range of stakeholders by fostering greater predictability and transparency in regulatory decisionmaking.

*The role of agencies  
is now more  
complex, because  
they must justify,  
defend, and explain  
their decisions  
clearly, forcefully,  
and transparently*



**W**HILE a clear picture of the full impact of *Loper Bright* on the promulgation of regulations is not yet visible, given what we know an outline of some steps that could be taken has begun to emerge, especially suggested steps by EPA. The agency should seize this opportunity to reassert the value of its scientific judgment, building regulatory narratives that are not only technically correct but also compelling to the courts. It should prioritize defining key statutory terms with specificity in its rulemaking process, anchoring definitions in both legislative history and science. Terms like “hazardous air pollutant,” “unreasonable risk,” and “best available technology” should be accompanied by detailed regulatory justifications that are backed by the best scientific data available. To the extent that scientific uncertainties are involved, EPA should explain their nature and show how they have been addressed. In rulemakings under various laws like the Clean Air Act, EPA might seek to more explicitly explain how it assesses terms such as “adequate margin of safety,” including the threshold assumptions, risk models, and uncertainty factors used to justify that margin. By clearly documenting how it balances risks to vulnerable populations against feasibility concerns, the agency can build a record that anticipates judicial scrutiny and underscores its role as a technical authority, with the goal of distinguishing questions of fact (based in science) from questions of law.

EPA should proactively address sources of uncertainty in order to be more transparent in its rulemaking. It and other regulatory agencies should also explicitly point to past interpretations, demonstrating how scientific developments justify any shifts, and acknowledge limitations or uncertainties. If possible, it and other agencies should explicitly distinguish between scientific uncertainty (e.g., data gaps or evolving methodologies) and policy choices (e.g., protective assumptions). This transparent framing may preempt legal challenges that conflate scientific discretion with unbounded governmental power. Additionally, an agency could publish more timely responses to public comments that explain how scientific and legal concerns raised were evaluated and incorporated—or not. These materials can serve as a persuasive record of reasoned decisionmaking. Finally, agencies must expand their use of public-facing databases that allow external experts to replicate and evaluate agencies’ analyses.

*Judges, many of whom lack technical training, now serve as the primary arbiters of statutory terms and concepts that demand technical judgment*

For industry, a shift toward sharpened regulatory definitions could reduce uncertainty and compliance costs and provide clarity about how regulations will be applied. Should regulators adopt well-defined rules, businesses may find it easier to anticipate and plan for regulatory obligations. This could result in more stable operational decisionmaking and fewer legal challenges. State governments and policymakers could also experience shifts in their roles within regulatory systems. With courts applying stricter statutory interpretations, the boundaries between federal and state authority could become more clearly defined. Narrower readings of federal statutes might limit the scope of federal preemption and create more space for state-level regulation, leading to adjustments in how federal and state agencies collaborate on policy implementation. States potentially could have greater impact in areas where federal law is less explicit. Public interest organizations will also likely see changes in how they engage with regulatory decisions. Now more constrained in their interpretive flexibility, agencies must lean more heavily on transparent and inclusive rulemaking processes. The public comment period gains renewed importance as a venue for establishing the factual record and rationale underlying new rules. By strengthening procedural rigor and opening their decisionmaking to greater scrutiny, agencies can enhance the defensibility of their actions and improve stakeholder buy-in and trust.

The end of *Chevron* deference does not mean the end of effective regulation, but it does mean the federal government must adapt to a fundamentally different legal and political environment. In this new era, agencies must lead not only as regulators but as strategic communicators, legal architects, public educators, and consumers of science. Agencies must take the invitation still left open by *Skidmore* to demonstrate the persuasiveness of their interpretations and the integrity of their science. They must proactively clarify the terms they use, distinguish the sources of uncertainty they face, and build rulemaking records that are as compelling to judges as they are to scientists and stakeholders. Federal agencies can no longer rely on the judicial deference standard that dominated the last 40 years of administrative law. Their role is now more complex, because they must justify, defend, and explain their decisions clearly, forcefully, and transparently. In doing so, the door is open for agencies to chart their path, and bolster their credibility, in a changed regulatory landscape. 🌱



## The Shadow Rule

*The little-known, judge-made administrative-remand rule can control access to federal appellate courts. It makes the courts more efficient and gives agencies space to correct their errors, but it also hamstringing litigants and can undermine environmental protection*



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**I**T WOULD be only a slight overstatement to say that environmental law is administrative law. Even toxic-tort and Superfund attorneys usually end up making, informing, challenging, defending, or at least writing about the decisions of administrative agencies at some point. For many of the rest of us, administrative law is our *raison d'être*, the class we wished we had paid more attention to in law school.

Despite the significant overlap between environmental and administrative law, very few environmental lawyers, even litigators, know about the administrative-remand rule. The what? Exactly. It is a prudential (judge-made) rule for cases in which a federal district court holds unlawful and remands (i.e., sends back) an agency rule or decision for further decisionmaking under the federal Administrative Procedure Act. The rule provides that, in most such cases, only the agency may appeal the remand. Other parties to an action who object to the grant, nature, or scope of a remand to an agency, including plaintiffs and non-agency defendants, must wait for the agency to issue a new decision. The rule prevails in all 13 federal courts of appeals, though in different forms and, in a few circuits, to different degrees. The rule is thus a doorman, and in determining who steps through, the rule also determines in significant part the substantive administrative law that comes out of the circuit courts. Yet the administrative-remand rule flies under most environmental lawyers' radar, even the radar of academic specialists.

Why? And so what? It has taken me nearly twenty years to understand the significance of the administrative-remand rule and to write about it. My hope is that, by the end of this article, you agree that the rule matters for environmental lawyers and their clients and warrants our field's scrutiny. The rule helps avoid needless appeals and gives space to agencies to correct their decisions. But it also has significant downsides for litigants and environmental protection. Some reform, whether congressional or prudential, is warranted.

Let's get into it. If environmental law is largely about administrative law, it is even more about stories. Stories, that is, about places and the people who live in or near them. Environmental lawyers know why we tell stories: they are the principal means through which people understand the world and try to persuade others, including judges. This fact is true even where a story has little bearing on the

merits of a case—think of the Irish setter who makes a brief cameo in a brief written by now-Chief Justice Roberts in *Alaska v. EPA*. The dog had nothing to do with Best Available Control Technology under the Clean Air Act, but it made that near-impenetrable topic more accessible and humanized Roberts's client, the Red Dog Mine. As law professor James McElhaney once observed, stories about places and people (and dogs) lend meaning to the otherwise “dry assemblages” of rules and facts that can obscure what legal disputes are really about.

There is no territory more parched than the intersection of federal appellate jurisdiction and administrative law, where the administrative-remand rule quietly sits. *Any* story would make it more interesting and relatable. The story I'll share, the one that got me exercised about the rule nearly twenty years ago, is about a place called Hope Valley. The valley is a gem in California's Sierra Nevada mountains, offering opportunities for quiet and solitude that are increasingly absent in the bustling Lake Tahoe area just to the north. Historically the valley was a thruway for gold miners and for Mormons returning from the Mexican-American War. Before that, before the valley and its features came to bear the names and language of Europeans—Hope Valley, Carson Pass, Hawkins and Pickett peaks—they were the home of the federally recognized Washoe Tribe of Nevada and California, whose members still reside nearby. For millennia the Washoe would pass through the valley along a trail they called Pewećeli's Trail, named for a central character in the tribe's creation story.

Over time Pewećeli's Trail became Forestdale Road, and over time Forestdale Road became something else: the focal point of a legal dispute between cross-country skiers, snowmobilers, and the U.S. Forest Service, which manages Hope Valley as part of the Humboldt-Toiyabe National Forest. In 2000, a group of skiers sued the Forest Service over its decision to allow, or rather not to prohibit, snowmobiles on Forestdale Road. Snowmobiles, especially those in use 25 years ago, can be noisy, polluting, and largely incompatible with cross-country skiing.

The Forest Service, like other federal land-management agencies, has the unenviable task of deciding which uses of public lands to allow where and when. Usually that means splitting the baby, and often it means legal action. In Hope Valley it meant both. Forestdale Road provides the easiest access into Hope Valley in the winter. The Forest Service,

in deciding that it lacked the authority to bar snowmobiles along the road (on the theory that the local county has a legal right to the road's use and control), effectively consigned much of the valley to significant snowmobile use for the then-foreseeable future.

The skiers sued, and they won—barely. In *Friends of Hope Valley v. U.S. Forest Service*, the U.S. District Court for the Eastern District of California held that the Forest Service needed to redo its environmental analysis because it had relied on “unscientific and unreliable” surveys to poll the opinions of skiers, snowmobilers, and other recreationists. The skiers had argued that the Forest Service didn't have enough information about user conflicts, but they hadn't said anything about any surveys. The court ruled for the Forest Service on the skiers' other claims, including whether the Forest Service had jurisdiction over Forestdale Road.

To the skiers, this “win” was anything but. Just about every environmental lawyer knows that a remand to an agency to more thoroughly study some narrow environmental impact under the National Environmental Policy Act is almost always an exercise in explanation. A better one, that is, by the agency for the decision it already made. For the agency, it is usually just a headache; for an environmental plaintiff, it is at most a press release. (I exaggerate, but only slightly.) Knowing this, and frustrated that the district court ignored their real concerns, the skiers appealed.

The Forest Service, critically, did not. That choice enabled me, as the agency's lawyer then at the U.S. Department of Justice, to argue that the Ninth Circuit was obliged to dismiss the skiers' appeal for lack of jurisdiction pursuant to the administrative-remand rule. I had stumbled upon the rule in my research when writing my brief, and I stumbled into a hostile panel of jurists when it came time for oral argument. (“Jurists,” not “judges,” because former Justice Sandra Day O'Connor, just recently retired, was sitting by designation on the panel.) All three jurists were reliable votes for the government, so I was surprised when all three gave me a hard time at the lectern. Their frustration was understandable, though; the administrative-remand rule precluded them from reviewing a remand that made little sense.

I and the rule ultimately won, but should we have? In researching and writing this article, as well as a longer article in the *Stanford Law Review* (forthcoming), my uneasiness about the outcome has been

alternately assuaged and inflamed. Where had the administrative-remand rule come from? Were there exceptions? Did the rule make sense? And what did the rule mean for environmental lawyers and environmental protection?

LET'S BEGIN with the administrative-remand rule's origins, development, and current status. (My findings in this section are based on reading and analyzing over 250 Supreme Court and circuit court decisions and scores of related secondary sources. Better I than you.) The rule is an outgrowth of the final-judgment rule, under which only final decisions of the district courts are final and therefore appealable. That rule predates probably everyone other than Pewećeli. Today the final-judgment rule is enshrined in 28 U.S.C. § 1291, with the exceptions federal litigators know well in § 1292 and a few other places like Federal Rule of Civil Procedure 54(b). The Supreme Court and federal courts of appeals generally adore the final-judgment rule; it ensures a “healthy legal system” by preventing piecemeal appeals, preserves district courts' “special role in managing ongoing litigation,” and prevents harassment through litigation.

The remand rule is the same thing, just in the administrative-law context. Again, it provides that only agencies may appeal remands. The rule has the same rationales as the final-judgment rule, plus two more. First, agencies should get a chance to correct their mistakes. Second, only agencies may appeal remands because only agencies might be deprived of review altogether if they cannot. Think about it this way: If a remand forces an agency to grant a plaintiff the relief it seeks, or to apply an erroneous legal rule or standard to that effect, after the remand there will no longer be a live case or controversy. The agency will have granted relief it cannot take back, and the agency will have lost its only opportunity to argue that the district court got it wrong. No such risk exists for a plaintiff or non-agency defendant, who can seek review of or defend the agency's new decision following the remand process.

By 1989, all 13 courts of appeals had adopted this rule. The courts had spent the prior two decades or so formulating the rule, relying on seminal Supreme Court decisions about the final-judgment rule and exceptions to it. Their rationales and legal support sometimes varied, but always they agreed on the basic idea: remands were not final for pur-



# Who Benefits From This Judge-Made Rule?

In a hidden and dark corner of administrative law—and one that often impacts environmental law—lie the uses (or misuses) of the administrative-remand rule. For environmental consultants or lawyers who work intensely to prepare comments for a new rulemaking, the judge-made administrative-remand rule is a Serbonian Bog that makes challenging a new federal regulation yet more intractable than ordinary. The rule permits an agency (and only the agency) to obtain a judicial remand of a prior rule for further consideration. The potential impacts of that exclusion are large.

For a practicing lawyer, however, the question is: How does this rule play out in current environmental law? Consider the curious case of *Ohio v. EPA*, decided in 2024—and what happened thereafter. In that case, a majority of the Supreme Court found that it was “likely” that EPA’s issuance of a rule under the Clean Air Act’s so-called Good Neighbor Policy was invalid on procedural grounds.

Specifically, the majority held that the agency had failed because it “offer[ed] no reasoned response” to certain comments on its final rule. Those comments including assertions that the agency’s final rule imposing a Federal Implementation Plan did not account for instances in which not all of the 23 states envisioned in the rule ended up being actually covered by it. This issue was not adequately addressed by EPA in its responses to comments and therefore, the Court held that the states (and other private parties) applying for a stay of the final rule were likely to prevail based on the agencies’ failure to supply “a satisfactory explanation for its action.”

It might be said that the proverbial handwriting was on the



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*“At this juncture, the environmental lawyer has a very recent and instructive example of the use of administrative remand, at least in the Clean Air Act context”*

wall. For the Court’s majority, EPA had failed to give a satisfactory explanation of its Federal Implementation Plan and, after a remand to the Court of Appeals for the D.C. Circuit, the FIP rule was inevitably headed to the capacious wastebin of regulations rejected by the nation’s highest court.

Then, a funny thing happened.

The D.C. Circuit got a request from EPA for an administrative remand of the rule back to the agency. The court of appeals granted that request in September 2024. EPA then published a new decision that it claimed addressed the perceived gaps in its prior rule. It will come as no surprise that the agency’s additional documentation found that the original rule, even with fewer than all 23 states participating, was still justified.

The state of Ohio (and others) who had just won a Supreme Court victory staying the rule howled about the unfairness of this administrative remand—even before EPA completed its mandated additional review. Instead, they sought Supreme Court review of the circuit court’s administrative-remand order. The co-petitioners, including Ohio, Indiana, Kentucky, and West Virginia, put the question presented as one involving

administrative remand issues:

“Whether the Clean Air Act permits remand to the EPA to supplement the administrative record with new information and justifications after a rule is promulgated.” The (renewed) petitioners argued that the remand back to the agency was an evasion of the Supreme Court’s earlier opinion: “Finally, the remand here could be seen by some to defy this Court’s clear directive—to consider the merits of the agency’s action on the existing record—at the emergency-review stage in this very case.”

The federal respondents argued that this type of administrative remand was perfectly consistent with Supreme Court precedent and, further, that EPA’s prompt action in this case precluded any claim of undue delay by the agency. The Supreme Court denied the petition of the states for certiorari in January 2025.

It remains to be seen whether a review of the merits of EPA’s Good Neighbor Rule, as supplemented last December, will result in upholding that rule. At this juncture, however, the environmental lawyer has a very recent and instructive example of the use of administrative remand, at least in the Clean Air Act context.

poses of appeal except as to agencies. This uniform rule, apart from reinforcing the Supreme Court's generally restrictive view of appellate jurisdiction, was a truce of efficiency; as the federal courts faced ever more decisions from a burgeoning administrative state, the rule gave agencies space to make decisions while saving appellate courts from the burden of reviewing countless remands.

But truces are fragile, and the lines between the judiciary and the executive are ever-shifting. "The overriding purpose behind almost every doctrine in administrative law is to control the exercise of agency discretion," law professor Rachel E. Barkow observes. Given this, and given federal judges' general propensity to draw lines and then move them, the administrative-remand rule has become much less fixed since 1989. Today, in some circuits (namely the Third, Sixth, Eighth, and Eleventh), the rule remains unbroken: only agencies may appeal remands. But in others (the D.C., First, and Ninth), it is now possible for non-agency parties to appeal remands in certain, if somewhat unpredictable, circumstances. In the remaining circuits, the appealability of remands by non-agency parties sits somewhere between theoretically possible and anyone's guess.

To complicate matters further, the form the administrative-remand rule takes in each circuit varies. Some circuits have no real test at all, some have tests that are only half-formed, and some have complex, multi-factorial tests that feel chillingly close to a law-school exam. Moreover, in the Ninth Circuit, the test is ever-changing, morphing from a set of "requirements" to one of "considerations" and back again, and yielding different outcomes in factually similar cases.

The result is a practitioner's nightmare. If you're an agency lawyer, in many circuits the rule is no longer the absolute bar you (and previously, I) could count on to bar an appeal where your agency client accepts the remand. If you represent plaintiffs or non-agency defendants, you may now have a shot at appeal even if the agency accepts a remand, but it depends on the circuit and even, in some circuits, the case.

And the factors and rationales you must grab hold of to figure out your options vary from circuit to circuit. If you represent plaintiffs, and you have a choice as to venue (as is commonly the case with federal-agency defendants), should you factor into your choice whether your client could appeal a remand (for example, if you are likely to fare better

on appeal than in the trial court)? And given all this uncertainty, how do you counsel your client, either at the beginning of a case or following the remand, around whether an appeal of a remand is possible or advisable? All this counsels in favor of reform, and in particular of a uniform administrative-remand rule that provides more clarity and certainty.

**A**S IMPORTANT as these legal-practice considerations are, I want to return to and focus on the real nub of this article: how the administrative-remand rule serves (and *dis*-serves) environmental protection. It was an environmental case that got me interested in the rule, and it is in environmental law where the rule can be especially consequential.

Most cases that produce remands to administrative agencies are straightforward. The remand correlates to the plaintiff's claims, the agency undertakes new proceedings to fix the error(s), and the agency timely issues a revised or new decision that either addresses the plaintiff's concerns or narrows the issues for further judicial review. In these cases the administrative-remand rule works as intended.

But what about a case like *Hope Valley*? There the district court's remand bore little resemblance to the plaintiffs' claims, setting up a likely wasted administrative proceeding that could take months (or even years) to complete. The D.C., First, and Ninth circuits have made their versions of the administrative-remand rule more flexible primarily in response to such "meaningless" and "protracted" remands. To my surprise, *Hope Valley* ended up being a poster-child for the administrative-remand rule: despite the district court's narrow and odd decision, on remand the Forest Service started from square one and arrived at a new, widely accepted winter-recreation plan that remains in place today.

But other cases with weird remands haven't turned out so well. In one, the remand offered the plaintiff relief it never sought (which is worse than *Hope Valley*, where the skiers got the remand they wanted, just on a ground they did not advance). In a second case, the agency told the court that it couldn't give the plaintiff the relief the remand required and wouldn't do so even if it could. In a third, the remand required a process that was incapable of giving relief to the plaintiffs. In a fourth case, the agency had already completed much of the (faulty) remand process by the time the circuit considered

# The Rule—and Agency Risk Management

Climbers with a summit in mind prepare assiduously. Preparations place a premium on fitness and mountain skills. But the high peaks are also filled with so-called “objective dangers.” These are the risks posed by weather, rockfall, and avalanches. Unlike expertise and vigor that individuals can develop, climbers have no control over the dangers posed by nature.

In litigation the objective danger is the court itself. Attorneys can master facts and law, but once a lawyer steps into a court, the judge is in control. Appellate courts are especially dangerous. These courts create precedents.

No party has more at stake in litigation than the federal government and the Justice Department lawyers who handle the bulk of the cases in the federal courts have historically worked hard to mitigate or eliminate risk to the institutional interests of the United States.

One tool, important to risk management is the administrative-remand rule, which can limit, in litigation against federal agencies, access to courts. In short, the rule provides that remands to an agency are generally final only as to the agency. In other words, in litigation under the federal Administrative Procedure Act, only the federal government can appeal from a decision that remands a rule or order back to the agency.

I spent 33 years as an appellate lawyer in the Environment & Natural Resources Division of the Department of Justice. I found one key component of my job was making recommendations to the solicitor general as to when the United States should appeal an adverse decision. The responsibility for deciding when to appeal and on what issues is committed



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*“The administrative-remand rule plays a critical role in allowing the federal government to manage risk, and has the salutary effect of keeping premature controversies out of court”*

to the solicitor general. This is an important function.

The United States is in federal court more than any other litigant, and federal agencies including environmental agencies lose many cases. Some cases they plainly deserve to lose. Perhaps the record is insufficient to support the agency decision, or the agency in its decisionmaking process has completely overlooked some aspect of the problem. In those cases, a remand to the agency makes far more sense than appeal. After all, the solution may be as simple as providing some additional explanation. If the agency were instead to appeal, and assert that its legal analysis is sufficient it risks creating an adverse circuit precedent.

When an agency accepts a remand, it retains control of its process, and Justice Department and judicial resources are preserved. But what happens if another party, the plaintiff or an intervenor, appeals? At this juncture things get complicated.

Consider for example a rule to delist a charismatic species like the gray wolf from the protections of the Endangered Species Act. For purposes of this discussion assume that wildlife groups have challenged

the rule and livestock interests—concerned about wolf predation on sheep and cows—have intervened to defend the agency’s rule. If the government declines to appeal and the administrative-remand rule does not apply, then defendant intervenors may be permitted to pursue an appeal even if the United States does not.

This may shift an agency’s calculus regarding the value of an appeal. Does the Fish and Wildlife Service, for example, want to concede to an intervenor and the defense of the act in the appellate court? That could be risky, since the intervenor does not administer the act and its arguments about the meaning of the ESA will reflect only the interests of the livestock industry. An agency is far more likely to accept a remand when it can be assured that no other party could appeal. And if the agency is going to redo its decision, a judicial resolution is premature.

The administrative-remand rule, in short, plays a critical role in allowing the federal government to manage risk and has the salutary effect of keeping premature controversies out of courts. The contours of the rule will continue to evolve, but often fewer cases in the courts of appeals is better for everyone.

the case. And in several more cases, the agencies let ungodly amounts of time (five years in one instance) pass without even beginning new administrative proceedings. In each of these cases the relevant court of appeals (rightly) allowed the plaintiff(s) to appeal the remand despite the administrative-remand rule, and in so doing made the rule more flexible.

Meaningless and protracted remands aren't the only concern. You may know or vaguely recall that remand with vacatur—i.e., the agency can't apply or enforce its decision during the remand—is the normal remedy under the Administrative Procedure Act. In *Hope Valley*, the district court adhered to that tradition, which meant the Forest Service reinstituted a long-derelict “travel map” that made neither the skiers nor the snowmobilers happy. In another case—say, if the prior travel map had instituted no controls on snowmobiles—vacatur might have led to not only unhappiness but also significant, lasting environmental harm during the remand proceeding. This situation so concerned two Ninth Circuit judges in 2023—in yes, an environmental case—that they called upon their court to revisit the administrative-remand rule in the future. A panel of Second Circuit judges has expressed similar concerns.

Finally, the administrative-remand rule can wreak havoc even in cases without vacatur. More and more district courts are granting remands while leaving the remanded decisions in place (a trend that has led to much hand-wringing among legal scholars). Again, an agency can take years to reach a new decision. All the while the plaintiff must endure a decision it claims (and the district court has concluded) violates the law, and all the parties must endure the uncertainty of not knowing what the agency will decide on remand. And leaving in place a decision a court has found unlawful may itself cause environmental harm.

In its purest, most rigid form (no appeals of remands by non-agency parties), the administrative-remand rule takes no account of any of these circumstances. The circuits that have blurred the rule have done so to try to correct that omission or ones like it, to forestall the injustices non-agency parties face from being unable to appeal a senseless or harmful remand. Not coincidentally, these circuits see the most challenges to agency rules and decisions. And not coincidentally (further underscoring that environmental lawyers should care), the majority of the cases in which the circuits have

blurred the administrative-remand rule have been environmental law cases.

**T**HE RULE has broader implications for environmental protection, apart from specific cases. Consider two. First, we are in the first year of yet another new presidential administration. Neither that fact nor the changes in environmental protection we can expect are novel. But we are already seeing that the tenor and extent of those changes feel and likely are different. In the past, new presidents respected many of the decisions and rules of their predecessors; in more recent years, efforts at wide-ranging, wholesale change are the norm. We've seen this trend in agency rules (the Forest Service, the White House Council on Environmental Quality's NEPA regulations) and agency decisions (EPA's greenhouse gas regulations, resource extraction from public lands).

So far, there is not much evidence that the administrative-remand rule is being used to augment these politicized about-faces, but I fear it is only a matter of time. How? If an agency under one administration makes a decision that is challenged and remanded, the same agency under a subsequent administration could use the rule to abandon the prior decision and reach a new one. The key is that plaintiffs and non-agency defendants could not appeal, and so would have no means to object other than during the administrative proceeding on the remand (if there even is one). Agencies already engage in this practice using settlement agreements. However, barring an appeal of a remand does not require the

court's or another party's consent, which makes it a more powerful tool for using the courts to reverse a predecessor's policies. You may say I'm reaching, but many of us said that of many other things just eight years ago.

Additionally, as directive as new administrations can be, much of the work that agencies undertake to implement and enforce our environmental laws remains free from direct presidential interference. (That, too, may change.) Such

agency freedom has been largely true of judicial interference, too, but we all know that the Supreme Court's current conservative majority seems hell-bent on hobbling the federal administrative state. The Court's recent decisions, from killing *Chevron* to strengthening the murky major questions doctrine, are naked efforts to check agency power. Here

***An agency can take years to reach a new decision. All the while the plaintiff must endure a decision it claims (and the district court has concluded) violates the law***



the administrative-remand rule is a bulwark against judicial intervention—it gives space to agencies to make decisions. A less rigid version of the rule—one that allows more appeals by non-agency parties, and thus greater judicial review of agency decisionmaking—could erode that space and give more power to judges to affect (or effect) policy choices. More broadly, a weaker rule could contribute to growing judicial, and perhaps popular, distrust of agencies and governmental institutions writ large.

The administrative-remand rule is therefore like a shadow; it operates in the background, but it has profound effects on the amount of sunlight that reaches the understory of administrative-agency decisionmaking. Many remands that remain in the dark, shrouded from appellate review, belong there; they resolve fairly and efficiently on their own. But some remands—those that likely would result in a wasted agency proceeding, or take too long, or cause environmental harm, or are used in a way that further politicizes agency decisionmaking—those remands would benefit from the rule's being pulled back and more sunlight let in. And even where the darkness makes sense, where we want a more rigid rule to insulate the daily business of agencies from judicial review, that rule should still be more transparent and predictable than it is now.

**W**HAT WOULD such a revised rule look like? What form of an administrative-remand rule would maximize benefits and minimize costs? And how would such a rule come about? To begin with, we need a uniform rule, one that allows agencies and non-agencies alike to roughly know who may appeal a remand and when. As much as I respect the circuits' self-determination, it isn't fair or workable for a non-agency party to be able to appeal a remand in one circuit but have no chance of doing so in another. That state of affairs also undermines the regularity of agency decisionmaking and may contribute to forum-shopping.

Uniformity isn't enough, however. We had that in 1989, when every circuit barred appeals by non-agency parties. But, as I've laid out above, there are cases where non-agency parties should be allowed to appeal, and a growing (if still small) number of judges agree. A new, uniform rule should reflect but regularize this permissive trend, always allowing ap-

***Remands are rightly supposed to be non-prescriptive, but judges can do more to tailor their decisions to the issues and concerns motivating a case, with clearer factual findings***

peals of remands by agencies and capturing the circumstances where non-agency appeals might also be warranted. In my view, those circumstances boil down to a remand that resolves an important and distinct legal issue, and involves any of the following, where: an effectively final decision leaves little for the court and agency to do; later review would be precluded without immediate review; there is a likely wasted administrative proceeding; or immediate appellate review is urgent, usually because the remand creates a substantial risk of irreparable harm during the remand proceedings.

There are three ways such a rule could come about. Congress amends the Administrative Procedure Act or the laws that set forth what constitutes a final judgment (namely 28 U.S.C. §§ 1291-1292). Or the Supreme Court promulgates a new final-judgment rule (using the Court's authority in 28 U.S.C. §§ 2702(c) or 1292(e)). Or, finally, the Supreme Court issues a decision in a specific case involving the administrative-remand rule. The third option is the least attractive; the Court's decision would probably be unhelpfully narrow or broad, and who knows what the current Court would actually do.

Absent such reform, the courts and environmental lawyers can do two things. First, district courts can craft better remands. Remands under the Administrative Procedure Act are rightly supposed to be non-prescriptive, but judges can do more to tailor their decisions to the issues and concerns motivating a case, with clearer factual findings and legal conclusions. Lawyers, in turn, can help themselves by asserting clear claims and arguments.

Second, lawyers can push the administrative-remand rule to be more flexible—to allow appeals of remands by non-agency parties—in appropriate cases. In circuits where the rule is fully formed and binding, en banc review might be required to change the circuit's precedent. But maybe not; some three-judge panels have made do without it. Continued case-by-case adjudication would not solve the transparency, inconsistency, and unpredictability concerns I have identified, but it would at least allow judges the freedom to eschew strict rules in favor of flexibility and justice in appropriate cases.

Whatever the vehicle for reform, the administrative-remand rule warrants it. The rule is profoundly important for environmental lawyers and their clients, quietly shaping not only the fate of many cases but also of the environment we seek to protect. 🌱

# Chocolate With No Bitter Aftertaste

*A few companies exercise control over the global cacao supply—profiting handsomely from tropical deforestation and human rights abuses. But there is another way. A paradigm changer's experience working directly with producers committed to sustainable production of heirloom cacao*



**Lori Shapiro** is the owner and founder of Sueños Heirloom Chocolate. A Ph.D. scientist, she founded the company to create a model of cacao cultivation that is environmentally sustainable, economically viable for growers, and healthier for consumers.

AS DUSK descends into deep darkness, I am enveloped by an otherworldly aroma. Heavy and rich, the earthy scent of the cacao we have spent the afternoon slowly roasting lingers over the humid, opaque landscape. As I drift off to sleep, a raucous cacophony of animals calling into the night surges from the adjacent tropical rainforest from which the cacao was recently harvested. After exactly 12 hours of darkness, the nighttime orchestra of insects, amphibians, and reptiles yields to the morning bird chorus. The faded aroma of yesterday's roasted cacao is reinvigorated by hot chocolate boiling on the stove for our morning's breakfast.

This was chocolate as I had never experienced it before. By luck and accident of circumstance, in 2006 I was an undergraduate exchange student at Finca Sueños, a small diversified farm in Ecuador. It was here that I was first introduced to cacao, the main ingredient in dark chocolate. All of the cacao grown at Sueños is Ecuador's rare heirloom "Nacional" varieties, which are world renowned for their exceptionally complex fruity and floral flavors and aromas. Nacional are the direct descendants of the first cacao trees domesticated in the Ecuadorian Amazon at least 5,300 years ago. At Sueños, cacao was not an anonymous and homogeneous commodity, diluted in sugar and powdered milk and wrapped in plastic. Every heirloom Nacional tree at Sueños is genetically distinct, and has a unique story. These cacao trees reside in a lowland moist tropical forest under the dappled shade canopy of hardwoods in the Chocó Andino, one of the world's most biodiverse regions. This mixed forest is the setting in which cacao had evolved to flourish over its approximately seven million year evolutionary history in the upper Amazon.

Almost 20 years later, I peer into my whirring stone grinder, where there are roasted cacao beans spinning into a luxuriously smooth chocolate. I am in Boston, and these beans are from the same trees in the same forest where I first experienced cacao in all its tropical, riotous, sensory overloading glory so many years ago. As the beans are pressed under the weight of stone rollers, they release aromas that saturate my production space, and transport me back to the vibrant, humming, buzzing and thriving forest where this cacao originated.

Smell is the most under appreciated of our senses. Human nasal cavities house more than 1 mil-



Yamile Roldan of Finca Sueños harvests heirloom cacao (left). She then ferments, roasts, and handcrafts the beans into unsweetened drinking tablets that are part of the region's culinary heritage (bottom) Photo: Lori Shapiro.





**Our hedonistic pleasures should not—indeed cannot—be at the cost of so much human and environmental suffering**

lion olfactory receptors that connect directly to our brain's centers of emotion (amygdala), memory (hippocampus) and decisionmaking (prefrontal cortex). Yet, our sense of smell is almost completely superseded by vision in the modern world, where we forage for food not in a forest, but in a carefully curated and spotlessly clean grocery store among neat stacks of food sealed away beneath layers of cardboard and plastic.

Experiencing heirloom cacao in a forest introduced in me a profound cognitive dissonance. Nacional is among the world's rarest, most sought after, and expensive fine flavor cacao. Yet, farmers I met at Sueños and the surrounding community explained to me that the local buyers pay a ruinously low price regardless of cacao quality and sustainability (or unsustainability) of cultivation methods.

For years after returning home I carried the searing contradiction of knowing the protectors of the world's finest luxury cacao were paid impoverishing prices. Eventually, I left my career as a research scientist and taught myself how to make chocolate so that I could import heirloom cacao from Sueños and several other small farms committed to growing Nacional the traditional way: in biodiverse regenerative forests without the use of agrochemicals.

**I**TRANSFER the chocolate from the grinder into the tempering machine, several pounds at a time. I press START and begin the process of heating, cooling, and heating the chocolate to produce a bar with a shiny surface and crisp texture. The physical weight of the chocolate, combined with the tantalizing bouquet of fruity, floral, and earthy aromas transport me back to the harvest. We move through the damp shade in a small group. As we walk, I am inundated with constantly changing fragrances as our boots bend flowers in the underbrush and our footsteps disturb the rich organic humus. There is no need to bring food or water. We pause frequently to sample the copious fruit that has ripened on taller fruit trees interspersed among the smaller cacao trees. We drink straight from coconuts, and the juice of tree-ripened oranges runs down my chin. We savor guanabana, cherimoya, avocado, papaya, starfruit, mangosteen, and a seemingly endless array of other delicacies. This is where our highly attuned sense of olfaction shines:

the evolutionary purpose of ripe fruit is to release a sumptuous aroma and entice a hungry, wandering animal (like ourselves) to gorge on its sweet, nutritious pulp and in doing so, disperse its seeds.

We move from tree to tree. I spot a football shaped cacao pod among the leaves, pull it down, and hand it to Monica Sevilla. WHACK WHACK WHACK! With three quick motions, she uses her finely sharpened machete to expertly split the woody pod, revealing the seeds that will become chocolate embedded in a sweet white pulp. Each freshly opened Nacional pod has a unique aroma and flavor. Some are floral and smell like jasmine, and some green and herbaceous. Some are fruity, encompassing a cascading diversity of flavors from sharply acidic to velvety vanilla, conjuring various types of fruitiness far more complex than the language I have to describe them.

My colleagues do not allow me to wield the machete because of the inherent dangers of an unskilled person swinging such a long, sharp knife into a handheld cacao pod. I can instead help spot ripe pods, and haul the heavy buckets of seeds through the tropical humidity to the greenhouse for immediate fermentation.

The growers I work with are adults who enthusiastically choose to continue this region's millennial tradition of regenerative agroforestry. They will sell most of the cacao they harvest. But there is a spiritual, cultural, and familial connection to cacao cultivation that transcends monetary transactions. They will keep plenty of their harvest for themselves, and lovingly ferment, dry, roast, and grind the beans to produce the same style of energizing cacao drinks that have been consumed here for at least 5,300 years. This is a reciprocal relationship: these farmers cultivate rare cacao trees in edible forests, and are viscerally connected to the landscape via consuming the delicious and healthful cacao and other fruits their forests produce.

My evoked memory of the beautiful bounty of this harvest has a darker edge. While cacao has flourished in the upper Amazon for millions of years, it was only introduced to West Africa in the early 1800s. This region now provides nearly 70 percent of the world's supply. In Ivory Coast and Ghana, the two biggest producers, the purchase price is informed by the commodity markets but fixed by the government. It is so low that an estimated 1.5-2 million children are forced by desperate economic circumstances into doing the dangerous and physically arduous work of harvesting cacao and applying toxic agrochemicals, without proper training or protective equipment. Some labor under conditions of modern day slavery.





WEST AFRICAN cacao farmers do not have a culinary tradition of cacao consumption, and do not eat or drink any of the cacao they grow. All of their harvest will be sold to a broker, and will pass through a series of middlemen until eventually arriving in a large corporate factory in the United States or Europe. For the millions of cacao farmers in West Africa, the connection between caring for their trees and the most intimate act of eating and being nourished by the cacao they have grown has been severed.

The brutality of cacao cultivation in West Africa extends beyond humanitarian horrors. It is estimated at least 80 percent of the moist tropical lowland forest in the Ivory Coast has been cleared for cacao cultivation, much of it illegally. The lives of the rural poor are so precarious that they are forced to clear intact tropical forests to produce cacao solely for export, and for which they will earn a pittance. The few monopolistic multinational confectionery companies that dominate the global cacao market profit spectacularly from this human exploitation and environmental destruction.

But our hedonistic pleasures should not—cannot—be at the cost of so much human and environmental suffering. The vicious reality of cacao cultivation is well documented and widely known, and there have been efforts to stop the worst of the abuses. In 2001, Senator Tom Harkin (D-IA) and Representative Eliot Engel (D-NY) negotiated an international agreement among the biggest chocolate companies to end the worst forms of child labor in their supply chains. The companies promised they could regulate themselves, and insisted the agreement should not be backed by the force of law. Trust us, they said: ending child labor is our priority. Multiple lawsuits have also been filed against the same industry giants.

And yet, environmental destruction and human exploitation in the name of cheap chocolate continues unabated. Even the most meager benchmarks the companies set for themselves in the Harkin-Engel protocol have not been met. These powerful, gargantuan confectionery companies operate beyond the control of national governments and weak international law bodies. I watch the chocolate flow through my tempering machine, unable to imagine working with or eating chocolate produced under such tragic circumstances.

It was only in 2020—five short years ago—when

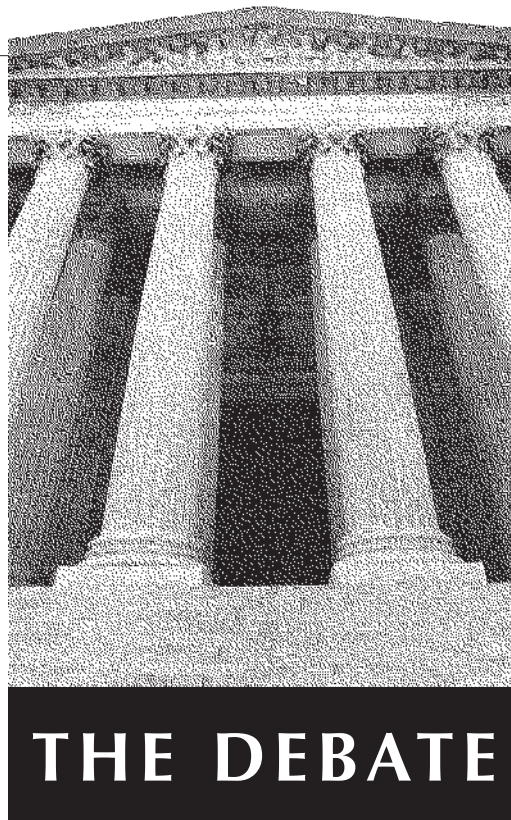
I started importing heirloom cacao directly from growers in Ecuador. It was an effort to fill the market and policy voids that were failing these farmers. We agreed they should set their sale price to ensure it correctly valued such an exquisite, sustainably produced product. And yet our original problem of ruinously low global commodity prices has already been superseded. Since early 2024, cacao commodity prices have skyrocketed several fold above their historical average. This didn't happen because corporations finally developed a conscience about the inconceivably paltry prices they were paying producers, indirectly through middlemen for plausible deniability.

Global warming is now significantly impacting cacao production, as scientists have long warned it would. In the West African cacao belt, heat waves, droughts, and floods are causing cacao harvests to plummet and global prices to soar. Every year, there are fewer plump pods hanging from trees, smaller piles of beans fermenting, and less forest left to clear. The industrialized world has yet to slow the growth of fossil fuel emissions. That cacao, a product of biodiverse tropical forests, would be among the first to suffer from tropical forests' precarious decline is a tragically fitting parable. Cacao scarcity is now another harbinger of our accelerating climate crisis.

It is June in Boston, and I feel the temperature in my workshop rise as the midday warmth replaces the morning's cool. This is my last batch of the season, and after the final chocolate is dispensed I turn my stone grinder and tempering machines off. Each year, I return to spend July at Finca Sueños, the namesake, origin, and inspiration for my little business. Over the 11 months in which I grind cacao beans and carefully craft chocolate bars, my olfactory receptors acclimate to continuous exposure to the rich bouquet of aromas released by the chocolate. The revelation of heirloom cacao's captivating fragrance gradually becomes less and less intense.

As soon as I return from my month at the farm, renewed and hydrated from the tropical moisture and unaccustomed to the aromas of my production space, the ambrosial scents of forest cacao will collide with renewed force into my olfactory receptors. With new memories and relationship renewed, I begin to grind the cacao seeds gathered from the same forest from which I just returned. Another cycle begins. 🌱

**And yet, the environmental destruction and human exploitation in the name of cheap chocolate continues unabated**



## *Renewable Energy Boon— or Environmental Boondoggle?*

**Green hydrogen**, produced using wind, solar, and other renewable electricity to split water molecules, is either lauded as an indispensable clean energy source to fight climate change, or criticized as an overhyped promise.

Politically, at the Appalachian Regional Clean Hydrogen Hub ribbon-cutting last year, Senate environment committee chair Shelley Moore Capito (R-WV) lauded the Energy Department's \$30 million award to the project and vowed she'd continue advocating policies needed to "help the hydrogen economy thrive."

Supporters envision a "green hydrogen economy" built on zero-carbon fuels that cut air pollution and create new jobs, while building on existing electric and gas infrastructure. But critics describe the green

hydrogen economy as a pipedream and an expensive energy boondoggle. Currently comprising less than 1 percent of global hydrogen production, clean hydrogen investments will reach a 31 percent annual compound growth rate by 2032, fuel cell company Plug Power, Inc., projects.

But what are the green hydrogen economy's real prospects? What factors will boost green hydrogen demand? Could costs—including for pipelines and storage—turn the promise into a pipedream? Could the Trump administration's pro-fossil fuel policies pose an insurmountable barrier or, conversely, motivate a countervailing boon as concerned advocates seek to advance clean energy in today's environment? Do any major technical challenges or breakthroughs change the prospects?



**Selene Law**

Senior Associate, Energy & Power  
Cleantech Group

*“While it is getting harder to plan gigawatt-scale projects, demand could come from smaller distributed-use cases”*



**Jonathan Lesser**

Senior Fellow  
National Center for Energy  
Analytics

*“Green hydrogen will require its own delivery system. An entirely new pipeline system would have to be built”*



**Nile Malloy**

Climate Justice Director  
California Environmental Justice  
Alliance

*“We can build energy systems that center real democracy, where clean technologies create local jobs and wealth”*



**Joseph Romm**

Senior Research Fellow  
Penn Center for Science,  
Sustainability, and the Media

*“Scaling up hydrogen would seriously undermine effective efforts to avoid catastrophic climate change”*

## Reports of Its Death Are Greatly Exaggerated

By Selene Law  
and Diana Rasner

**G**reen hydrogen was all energy-policy people talked about until recently. Indeed, just two years ago the Inflation Reduction Act promised healthy subsidies for green hydrogen production. But this support has now fallen to the wayside. Even before the new administration took office, the green hydrogen story had started to sour. The abundant clean energy required to produce it never quite materialized, with renewable power prices in Europe remaining stubbornly high. End users have been unwilling to swallow such a high green premium.

Now the pendulum may be swinging in the opposite direction. High power prices and electrolyzer costs are not uniformly seen in every geography. China, for example, has been building out green hydrogen production capacity. China now produces nearly 60 percent of global electrolyzer manufacturing capacity, with the cost of green hydrogen around \$2-3 per kilogram in provinces with abundant renewable power. For reference, the target price of U.S. hydrogen production under the IRA was \$2 by 2025 and \$1 by 2030.

China currently has an estimated 3.6 gigawatts of electrolyzer capacity operational, with at least another 9 gigawatts in the post-final investment-decision stage. China is using renewable hydrogen in every major hard-to-abate sector: refining and petrochemicals, fertilizer production, steel smelting, mobility, and power storage. For example, Sinopec's 260 megawatt electrolyzer plant in Xinjiang will replace grey hydrogen production. Meanwhile, Baowu Zhanjiang's hydrogen-ready

direct-reduced-iron-shaft furnace produced the first hot metal in 2024.

Despite China's dominance in this space, as in almost every other space in clean tech, there are other signs of green hydrogen's utility. Gigawatt-scale hydrogen projects in Europe and the United States have been delayed and cancelled, but pockets of demand still exist, such as e-fuels or distributed ammonia production. Perhaps a better way of looking at green hydrogen is not comparing it with the envisioned versatile energy Swiss Army knife, but specialized like a chef's blade—not one-size-fits-all but for a specific and important purpose.

In the European Union and other geographies too, policy and mandates are likely to translate into at least some degree of green hydrogen demand growth. Every EU member state must ensure that at least 42 percent of the hydrogen used in industry is a renewable fuel of non-biological origin by 2030 and 60 percent by 2035—effectively forcing refineries, fertilizer plants, and future green steel projects to secure low-carbon molecules or pay carbon penalties.

Mandates in aviation and maritime regulation are also likely to encourage hydrogen demand. ReFuelEU Aviation obliges fuel suppliers to blend 1 percent synthetic “e-kerosene” by 2030, which is likely to create real, binding demand for green hydrogen as the essential feedstock in synthetic aviation fuel production. FuelEU Maritime similarly mandates ships over 5,000 gross tons calling at European ports to reduce their greenhouse gas intensity of fuel by 6 percent by 2030. Together these hard quotas translate into at least some degree of mandatory replacement of existing power sources.

Furthermore, Europe adds additional levies on imported grey hydrogen under the Carbon Border Adjustment Mechanism, while the region's internal carbon price is adding additional costs on grey hydro-

gen produced locally. Meanwhile, the European hydrogen bank offers subsidies to projects bridging the gap between renewable hydrogen production costs and the offtake prices. Admittedly, projects would have to show credible offtake for around 60 percent of the project's production—a tough criterion to fulfill. Other countries, such as Japan and China, also have supportive policies in place for ramping up green hydrogen.

While it is getting harder to plan gigawatt-scale projects, demand could come from smaller distributed-use cases. Most distributed hydrogen projects are still in early stages but show promise. Distributed green hydrogen cases cut out the need for transportation, which alongside production cost, is a major sticking point for developers and consumers.

U.S. company Talus AG uses solar-powered electrolyzers that convert water to green hydrogen, then synthesizes ammonia in containerized, modular systems deployed on-site at farms and co-ops. Boston-based start-up ReMo builds small- to mid-scale modular ammonia plants that use local renewable electricity to drive electrolysis, generating green hydrogen for ammonia on-site. They produce local ammonia and reduce any supply chain disruptions that could bring real benefits to remote and island agricultural sites.

Finally, the meteoric growth of data centers could also bring new use cases for hydrogen. U.S. start-up ECL Data Centers is building the world's first fully off-grid, modular data center powered primarily by green hydrogen fuel cells in California. Hydrogen fuel cells could become an option to help data centers to leverage on-site renewable energy alongside batteries.

*Selene Law is senior associate, energy & power, Cleantech Group. Diana Rasner is group lead, materials & chemicals and waste & recycling.*



# Green Hydrogen Is a Resource Fool's Errand

By Jonathan Lesser

**A**s a power resource, so-called “green” hydrogen has been aptly described as a “thermodynamic obscenity” because it takes far more energy to produce it than it provides when used. That’s an immutable consequence of the second law of thermodynamics. By the time one includes the energy required to transmit electricity to the necessary electrolysis plants, operate those plants, and compress the resulting hydrogen for transport and storage, the total energy expended will be twice the amount of useful energy the hydrogen contains.

The resulting *energy return on investment* will thus be one-half, or 0.5 with 1.0 as an even score. By contrast, the EROI for nuclear plants is around 75, meaning the electricity they generate is 75 times greater than the amount of energy input required. Just as no one would agree to spend \$100 on an investment with a negative return, it is foolish for society to invest in any energy resource that inherently requires more energy to produce than it can provide.

The dismal green hydrogen EROI excludes the additional energy required to transport it where it will be used, either in electric generating plants that burn pure hydrogen (which do not, as yet, exist) or to other storage facilities where it can be used in vehicles.

The current cost to produce hydrogen with electrolysis is between \$6-10 per kilogram. In 2021, the Department of Energy launched its Hydrogen Shot program, with a goal of reducing the cost to just \$1 per kilogram. But even under the best circumstances, and assuming

significant technological advances in electrolysis, the costs will never fall that low when the costs of production, storage, transport, and generation are tallied. Already, numerous green hydrogen projects in Europe have been cancelled.

Proponents claim that vast quantities of green hydrogen can be produced using surplus wind and solar generation. However, that claim presupposes there will be sufficient surplus wind and solar capacity, along with battery storage, to provide a steady stream of surplus power. But the surplus electricity won’t be free; wind and solar developers still have to recover their costs and make a profit. Moreover, the distribution and transmission lines required to deliver the surplus electricity will be costly.

There’s also a practical problem: how does one run an electrolysis facility that depends on intermittent delivery of wind and solar power? Do the plant managers require the employees to be on-call on windy and sunny days? No manufacturing facility operates that way. The only way to overcome this is to ensure that surplus electricity can be stored. But battery storage is costly. The most recent estimate published by the National Renewable Energy Laboratory put the cost of a typical 60 megawatt facility at over \$470 per kilowatt-hour of electricity provided.

Next, consider that green hydrogen would be used either for generating electricity or in vehicles. In either case, it will require its own delivery system. Existing natural gas pipelines are primarily steel; older pipes are cast iron. Exposing them to hydrogen results in embrittlement, leakage, and potentially catastrophic explosions. Hence, an entirely new pipeline system would have to be built.

Even if that challenge could be overcome, the hydrogen must be stored where it is to be used, such as for refueling vehicles. Only about

1,200 hydrogen-powered vehicles are in operation in the entire United States, virtually all of them in California.

Green energy advocates also assume that dispatchable *emissions-free generating resources* will be developed to overcome the inherent intermittency of wind and solar power, and that these will be fueled by hydrogen. New York State power planners, for example, assume that, by 2040, 15,000 megawatts of DEFR capacity will be available. Although some existing natural-gas-fired generating plants can burn small quantities of hydrogen, the technology to burn pure hydrogen in a generator does not exist.

Under the Inflation Reduction Act, green hydrogen is eligible for a subsidy of up to \$3 per kilogram. One kilogram of hydrogen contains just over 33 kilowatt-hours of electric energy (before conversion losses). That subsidy is equivalent to about 8.8 cents per kilowatt-hour. Burn the hydrogen in a conventional power plant (if one existed with that capability) having a heat rate of 7,000 BTUs per kilowatt-hour, and the subsidy increases to 20 cents. That’s five times higher than the average wholesale price of electricity in the country. The costs also far exceed estimates of the social cost of carbon.

Even if green hydrogen is touted as a way to reduce greenhouse gas emissions, its impact on the climate won’t be measurable. The Biden administration set a goal of manufacturing 10 million metric tons of green hydrogen per year by 2030. Even if that replaced an equivalent amount of gasoline, the impact on U.S. GHG emissions would be negligible, a few days’ worth of annual emissions.

*Jonathan Lesser is a senior fellow with the National Center for Energy Analytics. In December 2023, the Manhattan Institute published his report “Green Hydrogen: A Multibillion-Dollar Boondoggle.”*

# It Is a False Solution to the Climate Crisis

By Nile Malloy

**T**he hydrogen rush currently sweeping California risks repeating long-standing patterns of environmental racism and classism that frontline communities have resisted for decades. Backed by over \$41 million in federal oil and gas lobbying in 2023 alone, the drive for “green hydrogen” threatens to deplete already scarce water resources and expand fossil fuel infrastructure in frontline neighborhoods already burdened by pollution. The California Environmental Justice Alliance is a coalition of 10 organizations representing frontline communities across the state, and we refuse to let hydrogen become another burden imposed on low-income neighborhoods and communities of color that already bear the brunt of pollution.

Despite frameworks like CEJA’s Equity Principles for Green Hydrogen, most hydrogen planning lacks meaningful community engagement, enforceable safeguards, or transparent accountability. Nearly all of California’s hydrogen today is produced from fossil fuels, while truly green hydrogen makes up only a tiny fraction of overall output. Our communities assert that green hydrogen means hydrogen produced via electrolysis with surplus water and additional renewable energy, delivered to the grid on the principles of additionality, deliverability, and one-hour matching. Unfortunately, a lack of legislative consensus on a strong standard leaves the door wide open for greenwashing. Community concerns are treated as obstacles to circumvent rather than fundamental project criteria—which has long been the industry standard. While fossil fuel giants secure billions in

public funding through the hydrogen hub program, frontline communities are left with vague promises and non-disclosure agreements to stifle their concerns.

Fossil fuel companies are lobbying heavily to ride the hydrogen wave, promoting green hydrogen as a clean add-on, while building pipelines, storage hubs, and hydrogen-natural gas blending facilities in communities already burdened by decades of environmental degradation. Many “clean” hydrogen projects are simply cover for expanding fossil fuel infrastructure.

The deeply unpopular Scattergood Generating Station in Los Angeles is one example. Despite warnings from environmental justice research and law that hydrogen combustion emits nitrous oxides, worsening smog and health risks, the city plans to convert SGS into a hydrogen-ready plant. The project retains fossil infrastructure while sidelining cleaner alternatives like battery storage. Critics also cite concerns over cost, cumulative health impacts, water use in drought-prone areas, and the uncertain supply of truly green hydrogen.

It takes over 9,000 liters of purified water to produce just one ton of green hydrogen. California is a drought-prone state in which population growth, intensive agriculture, and climate change heighten water scarcity. Proposed facilities are concentrated in regions like the Central Valley, where hundreds of communities already face water shutoffs and agro-industrial contamination. In Tulare County alone, dozens of water systems serving predominantly Latine and farmworker communities have failed contamination standards for years. Programs that incentivize diverting scarce water to produce hydrogen are both shortsighted and unjust.

Green hydrogen requires massive investment, costing up to six times more than fossil-based hydrogen due to its heavy reliance on renewable

energy, plus the additional costs of building and maintaining methods of hydrogen transportation infrastructure—pipelines or trucking. Rather than right-sizing this technology to limited hard-to-electrify applications, it is propped up with public subsidies that could be better applied toward funding genuinely affordable, safe, and efficient clean energy solutions.

Perhaps the most frustrating case against green hydrogen is that it diverts focus from climate solutions we already know work. These same public dollars could accelerate wind and solar, battery storage, building electrification, public transit, and community microgrids—proven, scalable solutions rooted in meeting people’s needs.

We cannot trade one system of harm for another. Green hydrogen, as currently conceived, is not the clean energy breakthrough it’s marketed to be. A fuel system that relies on fracked gas, water-intensive processes, or high-pollution combustion—regardless of what color hydrogen label is slapped onto it—is not clean. It’s simply old harm rebranded as something new. Without strict regulation and enforcement—consistently lacking in frontline communities—hydrogen development is likely to repeat old patterns of environmental harm while claiming to be clean.

We can build energy systems that center real democracy, where clean technologies create local jobs and wealth, and climate action strengthens rather than threatens frontline neighborhoods. This future centers on distributed renewable energy and community ownership, ensuring enough energy for everyone while building the equitable, healthy world we all deserve.

*Nile Malloy is the climate justice director at the California Environmental Justice Alliance, a statewide coalition advancing the voices and leadership of frontline communities of color.*

# The Trillion-Dollar Green Hydrogen Scam

By Joseph Romm

New analysis confirms that trying to turn hydrogen into a large-scale energy and climate solution would be a disastrous dead end. It would cost trillions of dollars and undermine genuine climate action by misallocating vast quantities of renewables that could achieve far deeper reductions, and far more cheaply, by directly replacing coal, oil, and gas.

We know what the practical, affordable, and scalable climate solutions are—but are on track to misallocate over \$1 trillion by 2050 trying to prematurely scale up various costly, deeply flawed technologies, including hydrogen, direct air capture, and small nuclear reactors. But hydrogen is the most flawed, especially since this leakiest of gases drives near-term warming with 35 times the climate impact of CO<sub>2</sub> over a 20-year period.

In the early 1990s, I helped the deputy secretary of energy oversee every solution we were pursuing—including renewables and hydrogen. I ultimately ran the billion-dollar Office of Energy Efficiency and Renewable Energy, which supported many of the winning and emerging solutions we have today, including solar, wind, and geothermal power as well as advanced batteries, heat pumps, and electric vehicles. My new book *The Hype About Hydrogen: False Promises and Real Solutions in the Race to Save the Climate* sorts out the real, scalable solutions from the magical thinking.

Right now, hydrogen is mainly used as a chemical feedstock for petrochemicals and fertilizers. More than 98 percent is made from fossil fuels (hydrocarbons) and causes 2 percent of global greenhouse gas

emissions. Just replacing that dirty hydrogen with green hydrogen would require as much renewable electricity as the U.S. produces yearly from all sources—renewable and nonrenewable—to power the electrolyzers that extract hydrogen from water molecules.

That staggering inefficiency gives green hydrogen from renewables—the only practical way to make carbon-free hydrogen—a huge opportunity cost. Because if we misallocate vast amounts of renewables to make hydrogen, we lose the opportunity to achieve over four times as much CO<sub>2</sub> reduction for less money simply by using those renewables to directly replace fossil fuels in power plants, vehicles, and other sectors we can electrify, such as heating and air conditioning.

So, after decades of effort and billions in spending by governments and companies, the use of hydrogen for “new applications in heavy industry, transport, the production of hydrogen-based fuels or electricity generation and storage . . . remains minimal, accounting for less than 0.1 percent of global demand,” as the International Energy Agency reported in 2023. Hydrogen is a lousy energy carrier, especially compared to using electricity directly.

Significantly, while virtually everyone had predicted electrolyzers and green hydrogen would come down steadily in price this decade—as much as 80 percent—the cost of producing both are still high. In fact, electrolyzer prices jumped 50 percent in recent years, according to S&P Global Commodities, because “electrolyzer projects tend to be highly complex, bespoke, and are proving far harder to construct than initially anticipated.” A 2023 Boston Consulting Group analysis noted electrolyzers used to make green hydrogen “have a cost-overflow potential exceeding 500 percent.”

As a result, *BloombergNEF* now forecasts their price will only drop in half by 2050, “assuming continued

government support and free trade.” The market research firm notes this forecast “is about three times as high as what we anticipated in our 2022 analysis.” So, as JP Morgan explained in March, “just 1 percent of all projected green hydrogen production has a binding offtake agreement.”

In June, the modelers at Climate Interactive completed a detailed hydrogen analysis. Absent any new climate policies and actions, their En-ROADS model—which they created with MIT—projects total warming of 3.3°C by 2100 even with baseline renewable use more than quadrupling.

Yet, a big push to have 5.5 percent of final energy demand provided by green hydrogen by 2050 would lower that temperature by just one tenth of a degree. But even assuming hydrogen’s massive technological and practical challenges can be overcome, that path would have a cumulative cost of over \$25 trillion by 2050, and it would average over \$3.5 trillion more each year after that through 2100. It’s a tiny effect for the money spent.

But the opportunity cost is huge, because that path requires adding enough renewables from 2025 through 2100 to double the baseline growth. Yet the analysis found that with a little over half the added renewables we could have twice the temperature impact for a fraction of the cost of the hydrogen path—by using those renewables to directly replace fossil fuels.

At best, green hydrogen could be a niche climate solution post-2050—with a couple of technology breakthroughs. But any effort to scale up hydrogen before the entire economy has cut energy-related CO<sub>2</sub> emissions by 90 percent would seriously undermine efforts to avoid catastrophic climate change.

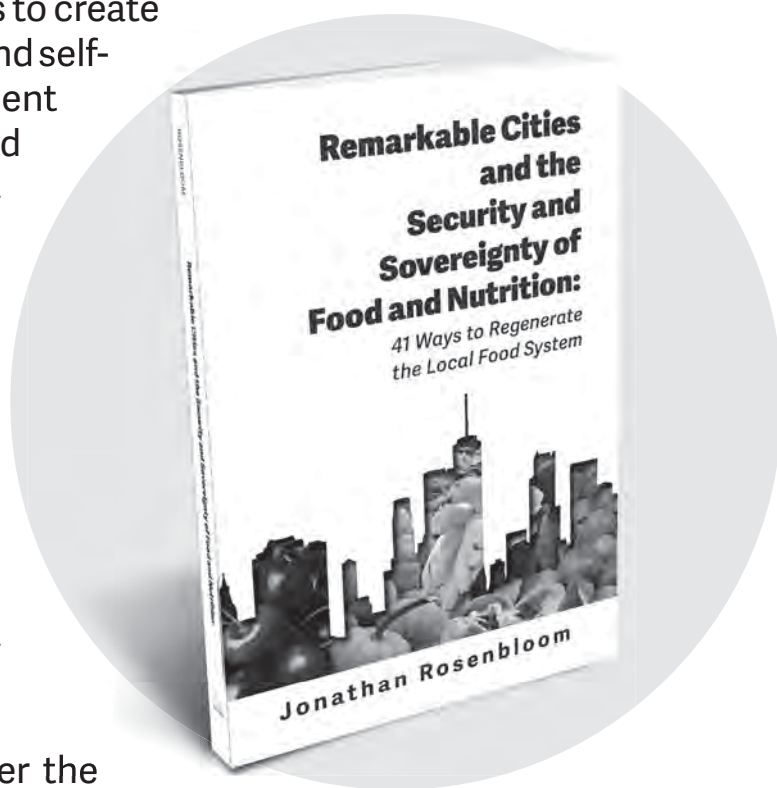
*Joseph Romm is a former acting assistant secretary of energy, and now a senior research fellow at the Penn Center for Science, Sustainability, and the Media.*

# Remarkable Cities and the Security and Sovereignty of Food and Nutrition:

## 41 Ways to Regenerate the Local Food System

by Jonathan Rosenbloom

Development is not sustainable if it fails to create and support food and nutrition secure and self-supporting neighborhoods. Development impacts many aspects of the food system, including where food is grown, how far food must travel before it is consumed, where distributors and retailers of food are placed, and who has access to fresh and nutritious food. By viewing development and its associated impacts through a sustainability lens, we can rethink the role of development and how communities can grow while fostering a strong, inclusive, affordable, accessible, and healthy food system.



This book, the second in a series under the Sustainability Development Code project, seeks to jumpstart a move toward healthier, more equitable, and more environmentally friendly communities. Examining the way local governments regulate development and how that impacts the food system, the book offers 41 recommendations to amend development codes to increase food and nutrition security and sovereignty and create healthier communities.



ISBN: 978-1-58576-263-7 | 336 pages | Price \$14.95  
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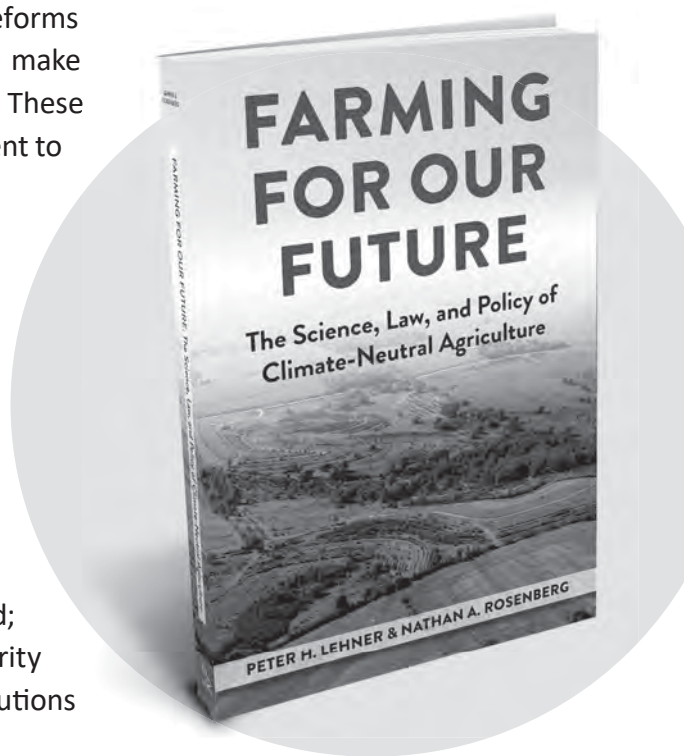
# FARMING FOR OUR FUTURE

## The Science, Law, and Policy of Climate-Neutral Agriculture

by Peter H. Lehner & Nathan A. Rosenberg

*Farming for Our Future* examines the policies and legal reforms necessary to accelerate the adoption of practices that can make agriculture in the United States climate-neutral or better. These proven practices will also make our food system more resilient to the impacts of climate change.

Agriculture's contribution to climate change is substantial—much more so than official figures suggest. We will not be able to achieve our overall mitigation goals unless agricultural emissions sharply decline. Fortunately, farms and ranches can be a major part of the climate solution, while protecting biodiversity, strengthening rural communities, and improving the lives of the workers who cultivate our crops and rear our animals. The importance of agricultural climate solutions should not be underestimated; they are critical elements both in ensuring our food security and limiting climate change. This book provides essential solutions to address the greatest crisis of our time.



*"Every eater should read this to better understand why we must demand that policymakers reform a dated and ineffective agricultural system to one that meets the needs of all of society, today and in the future."*

—Ricardo J. Salvador, Director and Senior Scientist,  
Food & Environment Program, Union of Concerned Scientists

*"Lehner and Rosenberg lay out the details in a highly readable and succinct manner . . . Their prescriptions form a well-drawn blueprint for the White House and USDA to follow and for Congress to adopt in the 2023 federal farm bill. Adoption of the book's recommendations would put U.S. agriculture on a rapid path to decarbonization and resilience. Policymakers should pay heed!"*

—Ferd Hoefner, Policy Consultant and Fomer Policy Director  
of the National Sustainable Agriculture Coalition



ISBN: 978-1-58576-237-8 | 266 pages | Price \$24.95  
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# Movers & Shakers

## MOVERS

Downey Brand LLP welcomes **Alyson Ackerman**, **Joshua Bailey**, **Clif McFarland**, and **Michael Vergara** to its Sacramento office. Aly



advices public and private clients on a wide range of environmental and natural resources matters.

Josh brings a comprehensive background in litigation and advisory work to his natural resources practice. Clif, who has more than



35 years of experience and a background in engineering, offers legal and scientific insight to a variety of complex environmental matters. And



Mike brings over three decades of experience representing public agencies and private businesses in high-stakes environmental litigation, regulatory enforcement, and compliance matters.



**Brian Boynton**, former head of the Justice Department Civil Division, has rejoined Wilmer Cutler Pickering Hale and Dorr LLP as chair of its government and regulatory litigation practice. Brian will focus on representing clients in high-stakes litigation and regulatory matters.



Barnes & Thornburg LLP is pleased to announce that **Kelly E. Brilleaux** has joined the firm's Dallas office as a partner in its litigation department. Kelly is an experienced



product liability litigator, focusing her practice on individual and complex mass tort litigation.

**Simon Cassell** and **Naomi Y. Moncarz** have become counsel at the New York office of Skadden, Arps, Slate, Meagher & Flom LLP. As members of the



firm's energy and infrastructure projects practice groups, Simon and Naomi focus on the development and financing of energy and infrastructure-related projects.

Bracewell LLP announces that **Lauren M. Clegg** has joined the firm's DC office as counsel in the energy regulatory practice. Lauren joins the firm after a decade at the Pipeline and Hazardous Materials Safety Administration within the Department of Transportation, where she was deputy assistant chief counsel for the Office of Chief Counsel in the Pipeline Safety Division.



**Rob DeConti** has joined King & Spalding LLP as a partner on its health care team in the government matters and regulation practice group in Washington, DC. Rob is the former chief counsel and deputy inspector general for the Department of Health and Human Services office of inspector general.



Nossaman LLP is pleased to announce that **Ashley Farhner** and **Jennifer Seely** have joined the firm's Seattle office as associates. Ashley, who joins as a member of the eminent domain & inverse condemnation group, was a Washington state assistant attorney general, where she advised and represented clients in complex civil matters, including environmental. Jennifer, who



joins the firm as a member of the environment & land use group, was an assistant attorney general at the Alaska Department of Law, where she advised and represented the Alaska Department of Environmental Conservation.

**Benjamin C. Mizer** joins Arnold & Porter as a partner in the firm's complex litigation practice in Washington, DC. Ben brings over two decades of experience in both private practice and senior government positions, serving most recently as acting associate attorney general.



Pillsbury Winthrop Shaw Pittman LLP welcomes **Meghan Claire "M.C." Hammond** to its Washington, DC, office, where she serves as counsel in the firm's energy regulatory practice and nuclear energy team. M.C. previously worked in the Department of Energy's Office of the assistant general counsel for civilian nuclear programs.



**Meghan Dawson McElvy** joins O'Melveny & Myers LLP as a partner in its general litigation practice group and energy industry group in Houston. Meghan,



who has more than 15 years' experience, represents clients in high-stakes commercial litigation and arbitration across the energy sector, including oil and gas, renewables, liquid natural gas, and related infrastructure.



# Movers & Shakers

Holland & Hart LLP announces that **Jennifer Scheller Neumann** and **Amelia Yowell** have joined the firm's Washington, DC, office as of counsel. Prior



to joining the firm, both had distinguished careers at the Justice Department's Environment

and Natural Resources Division. Jennifer most recently



served as chief of ENRD's appellate section, where she directed litigation and appeals on every

major environmental and natural resources statute. As an appellate attorney at ENRD, Amelia defended federal agency approvals for many different projects—including mining operations, oil and gas development, and electric infrastructure.

**David M. Uhlmann**, who served as assistant administrator of EPA's Office of Enforcement and Compliance Assurance, has joined



Marten Law as a partner in its Washington, DC, office. David represents state and local governments

in their efforts to address climate change and exposure to PFAS and other emerging contaminants; renewable energy companies, utilities, and trade associations; and corporate clients.

DLA Piper LLP welcomes **Paul F. Wight** as a partner



in the projects and energy practice areas in Washington, DC. Paul's practice focuses on

issues and litigation arising out of the restructured electricity markets and new energy technologies. He also concentrates on energy transactional matters.

**Blake Winburne** joins Willkie Farr & Gallagher LLP as a partner in the corporate and financial services



department in Houston, where he will serve as co-chair of the firm's energy and infrastructure

practice. Blake counsels clients on complex mergers, acquisitions, dispositions, investments, and joint ventures, as well as on the development, structuring, and financing of large-scale infrastructure projects in the United States and internationally.

## SHAKERS

**Astrika Adams**, a senior associate with Beveridge & Diamond, P.C., was elected to the board of governors of the Virginia State Bar Environmental Law Section. The section provides programs and publications that keep Virginia bar members up to date on developments in state and federal environmental law.



Bergeson & Campbell, P.C., announces that **Richard E. Engler**, director of chemistry,



was named an Alliance for Chemical Distribution expert of the year in the standards category, recognizing those who demonstrate excellence in upholding ACD's comprehensive set of environmental, health, safety, security, and sustainability standards.

**Galen Gentry**, who serves as counsel in Downey Brand LLP's litigation department



in Sacramento, was appointed to the Gold Country Wildlife Rescue's board of directors. Founded

in 1991, the organization is a nonprofit dedicated to the rescue, rehabilitation, and release of injured and orphaned wildlife permitted through the California Department of Fish & Wildlife and the U.S. Fish & Wildlife Service.

The University of California Berkeley Law honors **Jayni Hein**, co-chair of Covington & Burling LLP's carbon management and climate mitigation industry group, with the 2025 Berkeley Law



Environmental Leadership Award. Jayni was selected in recognition of her advocacy for the environment and her commitment to public service. As the former senior director for clean energy, infrastructure, and the National Environmental Policy Act at the White House Council for Environmental Quality, Jayni worked to modernize federal permitting and release new climate change guidance.

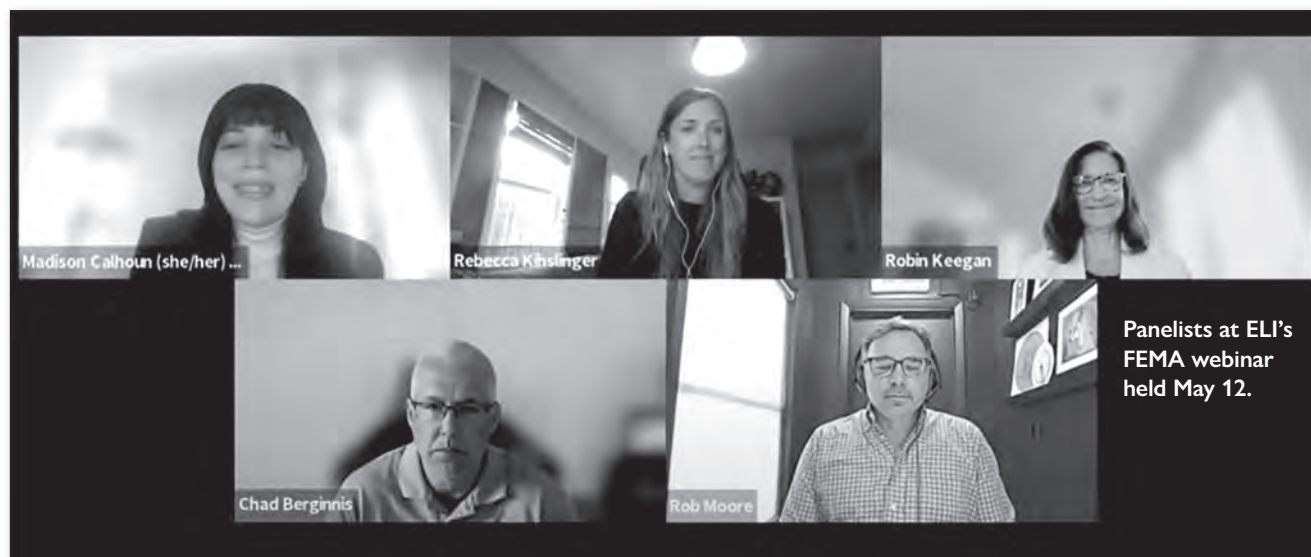
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# ELIREPORT

Making Law Work for People, Places, and the Planet



## Webinar series tracks turmoil at federal agencies

In a time of rapid change in environmental law and policy, understanding how federal agencies function—and the roles they play—is more important than ever. Agencies can be complex in their structure, purpose, and history, and their impact on our lives is often overlooked or misunderstood.

To help demystify this critical part of the environmental landscape, ELI has launched a new webinar series, **Agency ABCs**. This series explores the missions, structures, and services of key federal agencies, offering clear, accessible insights into how they shape environmental policy and practice.

Federal laws and institutions form the backbone of much of our system for addressing environmental challenges. Agencies play the leading role in this structure,

administering and enforcing federal laws by spending congressionally appropriated funds, promulgating rules, and adjudicating specific cases. This all has a direct impact on how environmental policies are implemented, enforced, and upheld.

The first installment focused on the Federal Emergency Management Agency. Established in 1979, FEMA lies within the Department of Homeland Security and has a mission to help individuals and communities “before, during, and after” disasters. It plays a critical role in emergency management and response, one that is increasingly important as disasters occur at a more frequent pace and more extreme levels.

Yet at a time when billion-dollar disasters are reaching historic highs, this longstanding, nonpolitical mission has

been called into question. ELI convened a panel of experts on FEMA and federal disaster mitigation to talk about the function of the agency and the importance of coordinated emergency management at the federal, state, and local levels. Together, the panelists covered the role FEMA plays before, during, and after emergency events and how the agency works with communities.

The second webinar turned to oceans and weather, highlighting the National Oceanic and Atmospheric Administration. NOAA’s mission since its establishment in 1970 is to “understand and predict changes in climate, weather, ocean, and coasts, to share that knowledge and information with others, and to conserve and manage coastal and marine ecosystems and resources.”

NOAA is deeply intertwined with environmental law and policy offering a variety of environmental services, including weather forecasts and severe storm warnings, climate monitoring, coastal conservation and restoration, fisheries management, and more. But recently, NOAA has experienced layoffs, the shuttering of websites, such as climate.gov, that serve the public, and more.

The panelists explained the impact that the cuts will have on NOAA, including the loss of habitat protection programs and the whole office of research. They also talked about all the ways that NOAA supports the public, and what these changes could mean for the future of forecasting and scientific understanding.

Recordings for these webinars are available to members in the event archive.



## Fighting impacts of fashion trends, now a global industry

ELI hosted an in-office clothing swap, where staff had the opportunity to bring in new or gently used clothing and exchange with one another. Clothing was laid out in the conference room so people could walk around and see all of the options. At the end of the day, whatever clothing remained was donated to Bread for the City, a local nonprofit that facilitates community services including a food bank, legal assistance, and a clothing donation center.

The clothing swap was an opportunity not only to leave with some new pieces for one's closet, but to invite discussion on the impact that fashion and clothing have on the environment. The rise of fast fashion, named for the rapid design, production, and distribution of clothing at very low costs, has contributed significantly to carbon emis-



**Gently used clothing at ELI swap meet highlights the world-wide impact of clothing manufacturing and afterlife.**

sions, water usage, and landfill growth.

In 2019, the average consumer bought 60 percent more pieces of clothing than 15 years earlier, but each item was only held on to for half as long. This means a staggering increase in the amount of textile waste filling landfills. The

United Nations Environmental Program reported that one garbage truck's worth of clothing is incinerated or sent to a landfill every second.

Beyond waste, the fashion industry is responsible for up to 8 percent of global carbon emissions and is the second-biggest consumer of water,

with 700 gallons of water required for one cotton shirt. The industry is also responsible for water pollution from textile dyes, microplastics, and more.

There are steps that can be taken to ameliorate the impact of fashion on the environment. According to the UN, doubling the lifespan of clothing has the potential to reduce garments' greenhouse gas emissions by 44 percent. Businesses can take intentional actions to reduce waste and improve resource efficiency, while consumers must make environmentally responsible decisions.

ELI's clothing swap kicked off with a short presentation on clothing donation best practices, local donation centers where people could take their clothes, and ideas for how to repair clothes that cannot be donated.

## Overcoming barriers to community composting

ELI, the Natural Resources Defense Council, and the Institute for Local Self-Reliance recently released a **Model Municipal Ordinance on Advancing Community Composting**. This template is designed to reduce regulatory barriers to, and provide opportunities for, this useful addition to the solid waste crisis. Advancing community composting is one way to help municipalities meet their climate and waste reduction goals while achieving various other benefits.

Over 30 percent of all food in the United States goes uneaten, at enormous financial, environmental, and social cost. Composting is not only a critical food waste reduction strategy, but it can also reduce methane emissions from land-filled organic waste, reduce the



need for new landfills and incinerators, and produce a valuable soil amendment.

Community composting is designed to meet local needs, serve local interests, and engage the community in a variety of ways. This can include running educational programming on sustainability, providing local jobs, and promoting equity by filling gaps in access to waste services.

Unfortunately, community composters often encounter

regulatory barriers at both the municipal and state levels that can hinder their ability to establish and sustain operations. Accordingly, the new model is intended to help municipalities by providing off-the-shelf legal language to address regulatory barriers that are unintended, unnecessary, or disproportionate to the expected benefits of applying the requirements.

The model requires a municipality to review, compile, and maintain an inventory of

municipal ordinances and regulations that could apply to community composting operations and to determine whether any of them presents an unreasonable barrier. For any municipal ordinance or regulation that is determined to present a barrier, the model requires the municipality to reduce or eliminate the barrier to the extent practicable. The model also addresses specific barriers, including nuisance determinations, floodplain management, and licensing of organic material haulers.

The model also addresses the ways in which a municipality can provide opportunities for community composting, including promoting public awareness and education, offering technical assistance, and providing financial assistance.

## CLOSING STATEMENT

# Shifting Waters of Cooperative Federalism



**Jordan Diamond**  
President

**C**ooperative federalism is a foundational aspect of U.S. environmental law and policy. The core idea that the federal and state governments share authority in overlapping areas has long animated environmental governance, and is codified in some of our bedrock environmental laws. One of the marked characteristics of cooperative federalism, however, is that its contours change over time.

Recent deep cuts in funding have triggered concerns among state leaders, as well as others; and large-scale reductions in the federal workforce, including offices that oversee state-delegated programs, have raised implementation questions.

Environmental protection in the United States depends not only on strong federal leadership but also on well-resourced, empowered states. Both, not one or the other. In its most functional form, cooperative federalism offers a dynamic framework for innovation, responsiveness, and tailored implementation of environmental law and policy that accounts for both cross-cutting needs and regional priorities and concerns.

While the federal agencies work at a nationwide level, states are often on the frontlines—enforcing air and water quality standards, managing waste, protecting natural resources, and responding to emerging threats like climate change and PFAS contamination. And they act as laboratories of democracy, piloting new models of environmental governance—with the varying results one expects from experimentation.

ELI explored shifts in the scales

of cooperative federalism in 2018 in “The Macbeth Report: Cooperative Federalism in the Modern Era,” highlighting the changing landscape and critical issues such as eroded trust. This context has continued to grow more complex.

But one thing remains constant, and that is that cooperative federalism requires balance. When the federal role retracts, the role of states necessarily grows; and vice versa. The challenge, however, is in the associated capacity. If the role of states is going to increase, they must have the means—financial, technical, and institutional—to do so effectively. And that capacity can’t be created overnight. We saw this post-Sackett, when the assertions that waters no longer under federal jurisdiction would be covered by state programs were contradicted by the fact that nearly half of the states didn’t have programs that regulate dredge and fill, and won’t for years.

For decades the Environmental Council of the States, under Ben Grumbles’s current leadership and earlier, has provided a critical venue for state environmental leaders to share knowledge, coordinate action, and articulate and advocate for state roles and positions. Their work underscores the importance of maintaining not only federal standards but also the support systems that allow states to implement those standards in ways that protect public health and ecosystems.

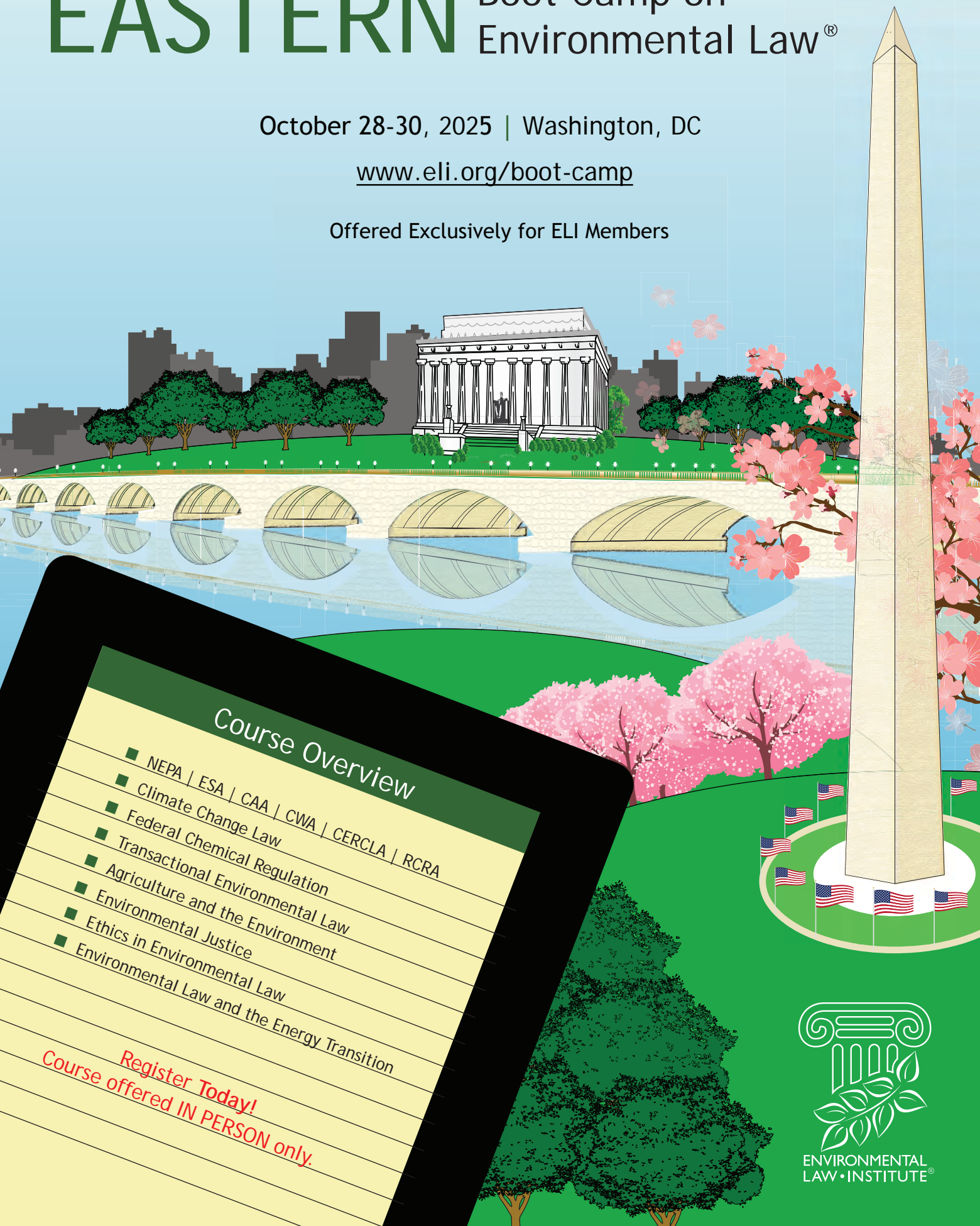
We’re excited to acknowledge ECOS and Ben with the ELI Award this year, on October 7 at the Mayflower Hotel in D.C.

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