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COASTAL JUSTICE: LESSONS FROM THE FRONTLINES

Marcela Gutiérrez-Graudiņš and Gregg P. Macey*

ABSTRACT

Dual commitments to equity and conservation—such as federal and state 30x30 programs—present an unprecedented opportunity to adjust thresholds for responsible governance and the extent to which the environmental justice movement continues to rely upon the state. This Article is the first to render such an adjustment, drawing on over a decade of work by a leading coastal justice organization to accommodate conservation, environmental, and racial justice thresholds, mandates, and requirements. Responsible governance must avoid community erasure, account for variance in community formation and racialization, and ensure community ownership over process and systems. It must reverse historical injustices that are magnified by ongoing policies and practices, bring appropriate staff and analytical capacity to bear to affirmatively enforce antidiscrimination laws, and advance creative and expansive use of existing authorities. Finally, it must rearticulate what it means to integrate environmental justice principles within state and federal policy. Informed by collaborations with communities and agencies alike to address conservation challenges, we advance priorities to guide development, design, and implementation of coastal policy and conservation commitments. These priorities should serve to supplement and correct for those put forward by 30x30 programs, which are vague, invite bias, rely on ecological and value data that privilege terrestrial as opposed to freshwater and marine regions, fail to explore links between conservation and human health, and only recently turned to matters of equity, reliant instead on matters of access as a proxy.

I. Introduction

Well into the 2030s, federal and state agencies will grapple with demands to meet conservation commitments that simultaneously advance environmental justice. Within hours of inauguration, the Joseph Biden Administration announced the building blocks of arguably the first governmentwide response to environmental racism.[1] It emphasized threats to disadvantaged communities from "overburden by pollution" and "underinvestment in housing, transportation, water and wastewater infrastructure, and health care."[2] It created new institutions to advance its priorities.[3] A Council on Environmental Quality report outlines progress made thus far across the federal family, including the Justice40 initiative, advances in screening tools, and proposed revisions to Executive Order No. 12898.[4] Uniquely heartening to generations of organizers and community leaders are steps to revive the U.S. Environmental Protection Agency's ("EPA's") moribund civil rights practice.[5] Half a century after EPA promulgated Title VI regulations, civil rights attorneys and analysts will, for the first time, share a national office with envi-

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1. Hana Vizcarra & Hannah Perls, Biden's Week One: Mapping Ambitious Climate Action 6 (2021), http://eelp.law.harvard.edu/wp-content/uploads/Bidens-Week-One-Report_030321.pdf [https://perma.cc/DSF6-N8QQ] ("Biden's EO sends a clear signal that EJ will now be a government-wide priority.").
2. Exec. Order No. 14008, 86 Fed. Reg. 7619, 7629 (Feb. 1, 2021) (Tackling the Climate Crisis at Home and Abroad).
3. *See id.* at 7629–30.
4. White House Env't Just. Advisory Council, Final Recommendations: Justice40 Climate and Economic Justice Screening Tool & Executive Order 12898 Revisions 5–6 (2021), https://www.epa.gov/sites/default/files/2021-05/documents/whiteh2.pdf [https://perma.cc/NJK5-2WSU]. The Justice40 Initiative directs states and other grant recipients to achieve 40% of the overall benefits of investments related to clean energy, energy efficiency, clean transit, affordable housing, workforce development, clean water and wastewater infrastructure, and remediation of legacy pollution within disadvantaged communities. *Justice40: A Whole-of-Government Initiative*, White House, https://www.whitehouse.gov/environmentaljustice/justice40/ [https://perma.cc/3ANJ-GA6Y] (last visited Feb. 20, 2023).
5. For a detailed history of EPA's civil rights practice, see, e.g., U.S. Comm'n on C.R., Environmental Justice: Examining the Environmental Protection Agency's Compliance and Enforcement of Title VI and Executive Order 12,898 (2016), https://www.usccr.gov/files/pubs/2016/Statutory_Enforcement_Report2016.pdf [https://perma.cc/26MW-VE2D].

ronmental justice staff.[6] The office will assume pride of place next to media-centered departments such as water and air.[7] These and other elements of institutional change are joined by historic investments in legacy pollution, environmental monitoring, clean water infrastructure, and community resilience.[8]

The Administration also created the first national goal to conserve "at least thirty percent of [U.S.] lands and waters by 2030."[9] This objective mirrors policy Azul[10] helped establish in California.[11] State and federal conservation commitments will place ecological health and carbon dioxide removal through nature-based solutions, such as soil carbon sequestration and restoration, alongside underdeveloped, underfunded, and neglected environmental justice policies.[12] Under Justice40 and state requirements to achieve certain levels of enforcement, cleanup, and investment in disadvantaged communities,[13] these policies continue to struggle with community screening and equity assessment, which the Office of Management and Budget described as "nascent and evolving" in science and practice.[14] These frameworks will continue to evolve, even as 30x30 commitments such as the president's directive in Executive Order No. 14008, Tackling the Climate Crisis at Home and Abroad, are implemented and windows of opportunity close.[15] Thankfully, Azul's daily work calls for us to accommodate conservation, environmental, and racial justice thresholds, mandates, and requirements. The work has been described over 20 years as, among other things, coastal access equity,[16] marine justice,[17] environmental justice for portside communities,[18] and blue justice.[19] To acknowledge and integrate prior efforts, we consider them under a broad framework that we refer to as "coastal justice." Recent attempts to coin the term are misleading, given that coastal communities were a focus of environmental justice organizing and research from the start of the movement.[20] What is new, we argue, is the state's capacity to refine what it means to "integrate" environmental justice principles within state and federal coastal and conservation policy.[21] As first movers in our attempts to meld conservation, environmental justice, and racial equity, Azul and similarly situated groups are a vital source of organizational memory. We summarize Azul's work in the context of the growing intersection of conservation and environmental and racial justice mandates. Drawing from Azul's past and ongoing struggles, partnerships, and victories, we advance priorities to ensure coastal justice can be achieved in light of recent shifts in conservation planning, so that the present moment's promise and potential are not squandered. Dual commitments to equity and conservation—such as federal and state 30x30 programs—present an unprecedented opportunity to adjust thresholds for responsible governance and the extent to which the environmental justice movement continues to rely upon the state. Responsible governance must avoid community erasure, account for variance in community formation and racialization, and ensure community ownership over process and systems. It must reverse historical injustices that are magnified by ongoing policies and practices, bring appropriate staff and analytical capacity to bear to affirmatively enforce antidiscrimination laws, and advance creative and expansive use of existing authorities. Finally, it must rearticulate what it

6. *EPA Launches New National Office Dedicated to Advancing Environmental Justice and Civil Rights*, U.S. Env't Prot. Agency (Sept. 24, 2022), https://www.epa.gov/newsreleases/epa-launches-new-national-office-dedicated-advancing-environmental-justice-and-civil [https://perma.cc/XC4Z-TEHS].
7. *Id.*
8. *See generally* Press Release, The White House, Fact Sheet: A Year Advancing Environmental Justice (Jan. 26, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/26/fact-sheet-a-year-advancing-environmental-justice [https://perma.cc/XYX3-5KT8].
9. *See* Exec. Order No. 14008, *supra* note 2, at 7627.
10. *See Our Recommendations for California's Strategies to Conserve 30 Percent of the State's Land and Coastal Waters by 2030*, Azul (Aug. 17, 2021), https://azul.org/en/blog/azul-30x30-california-letter-expectations/ [https://perma.cc/F9V9-VWXS].
11. *See, e.g.*, A.B. 3030, 2019-2020 Reg. Sess. (Cal. 2020).
12. *See, e.g.*, Request for Information & Notice of Public Listening Sessions, 87 Fed. Reg. 235 (Jan. 4, 2022) ("[M]any uses of lands and waters can be consistent with the long-term health of natural systems and contribute to addressing climate change and environmental injustices."); *see also* Savannah Bertrand & Kate Schneer, *Fact Sheet | Federal Resources for Nature-Based Solutions to Climate Change*, Env't & Energy Study Inst. (Feb. 2020), https://www.eesi.org/papers/view/fact-sheet-federal-resources-for-nature-based-solutions-to-climate-change#:~:text=Communities%20across%20the%20country%20can%20access%20federal%20assistance,and%20environmental%20co-benefits%20that%20can%20further%20strengthen%20communities [https://perma.cc/YW2T-HZZ7].
13. *See, e.g.*, S. 535, 2011-2012 Reg. Sess. (Cal. 2012).
14. Off. of Mgmt. & Budget, Study to Identify Methods to Assess Equity: Report to the President 14 (2021), https://www.whitehouse.gov/wp-content/uploads/2021/08/OMB-Report-on-E013985-Implementation_508-Compliant-Secure-v1.1.pdf [https://perma.cc/A9KV-SYBW].
15. U.S. Dep't of the Interior et al., Conserving and Restoring America the Beautiful 10 (2021), https://www.doi.gov/sites/doi.gov/files/report-conserving-and-restoring-america-the-beautiful-2021.pdf [https://perma.cc/P5XL-8NJ7].
16. Dan Reineman et al., *Coastal Access Equity and the Implementation of the California Coastal Act*, 36 Stan. Env't L.J. 89, 104 (2016). *See also* Jessica A. Duncan, *Coastal Justice: The Case for Public Access*, 11 Hastings Env't L.J. 55, 55 (2004).
17. *See* Jennifer A. Martin et al., *What Is Marine Justice?*, 9 J. Env't Studies & Scis. 234 (2019); *see also* Patricia Widener, *Coastal People Dispute Offshore Oil Exploration: Toward a Study of Embedded Seascapes, Submersible Knowledge, Sacrifice, and Marine Justice*, 4 Env't Socio. 405 (2018).
18. *See* Angie Fredrickson, *The California Coastal Act and Ports: The Unintended Environmental Justice Implications of Preserving California's Coastline*, 41 Coastal Mgmt. 258, 266–67 (2013) (describing significant, unavoidable environmental justice impacts in a 2008 draft environmental impact report for the Port of Long Beach).
19. *See* Nathan James Bennett et al., *Blue Growth and Blue Justice: Ten Risks and Solutions for the Ocean Economy*, 125 Marine Pol'y 104387, 104392 (2021).
20. For example, the Center for Environmental and Economic Justice carried out important work in the late 1980s and 1990s on pollution in coastal Mississippi and impacts on Black fishing communities. Robert Garcia, with whom Azul worked for many years, was Founding Director and Counsel of the City Project. He was among the first to link coastal access to environmental justice. *See* Robert García & Erica Flores Baltodano, *Free the Beach! Public Access, Equal Justice, and the California Coast*, 2 Stan. J.C.R. & C.L. 143, 153–55 (2005).
21. Jill Harrison's important work, and our own experience in California, suggest that agencies fail to integrate environmental justice principles into core regulatory work in ways that reduce hazards. *See generally* Jill Lindsey Harrison, From the Inside Out: The Fight for Environmental Justice Within Government Agencies (2019). California announced its first plan to ensure policy integration nearly 20 years ago. Cal. Env't Prot. Agency, Environmental Justice Action Plan 6 (2004), https://calepa.ca.gov/wp-content/uploads/sites/6/2017/01/EnvJustice-Documents-2004yr-EnglishStrategy.pdf.

means to integrate environmental justice principles within state and federal policy.

II. Azul's Work to Advance Coastal Justice

Azul is a Latinx-led and -serving environmental justice organization focused on marine conservation and ocean stewardship.[22] For over 10 years, Azul's people-centered work built a bridge between environmental justice and coastal and marine policy.[23] We integrated equity and access values into California's 30x30 strategies under Executive Order N-82-20,[24] worked with the California State Legislature to ensure that the Coastal Commission must consider environmental justice in its decisionmaking,[25] and co-sponsored a bill to establish a state 30x30 target.[26] Azul stands in solidarity with the Hidden Coast—the 80% of the national shoreline where rural, minority, and poor communities live in non-oceanfront tidal and estuarine zones and occupy low-lying land.[27] We acknowledge that coastal policy threatens the Hidden Coast, and the ecosystems upon which its communities rely, through defensive strategies that shift the impacts of erosion, flooding, sea-level rise, and other hazards.[28]

The coast is ground-zero for population growth, economic activity, and attempts to conserve ecosystems.[29] Coastal zones are distinct.[30] They represent a "diversified environment that draws a transitional line between sea and land."[31] Where land and water meet, the coast presents a mix of public and private rights,[32] as well as tension between ownership and civil rights.[33] Some of the most commonly cited frameworks that guide natural resource management in coastal zones, including commons, ecosystem services, and conservation, are rooted in white supremacy and Indigenous displacement.[34] Coastal ecosystems serve unique roles maintaining the nearshore environment's stability and ecology.[35] The spatial and temporal dynamics of slow violence[36] and settler colonialism, including devaluation and injury to relationships between land and people, are ever-present.[37] The concentration of industries such as concentrated animal feeding operations ("CAFOs") in low, flat, economically marginalized coastal plains strains "diverse, layered, and often byzantine jurisdictional design."[38] The mismatch between management, aid, and ecosystem-based disaster recovery strategies is acute.[39] Climate impacts such as sea-level rise and storm surge interact with a complex web of coastal engineering such as dam and reservoir construction, coastal armoring, and levee systems that spare industrial corridors from flooding.[40] Ocean acidification, the "other CO_2 [carbon dioxide] problem," poses outsized costs to coastal livelihoods as well as benefits of intervention.[41] It is not surprising that, more than 10 years ago, an environmental activist in Ecuador described the struggle to save coastal mangrove forests, among the most productive and fragile ecosystems in the world, as "la lucha justa"—the just fight.[42]

Azul recognizes the unfinished work of coastal justice. Coastal ecosystem management and environmental justice emerged on the national stage in the 1970s and 1980s.[43] Each represents a challenge to dominant environmental policy paradigms such as resource management and pollution control. Each expands our understanding of the "human environment"[44] and the interconnectedness of community and natural world. And each speaks to the promise of ecological democracy, as well as gaps in scien-

22. *About Us*, Azul, https://azul.org/en/who-are-we/ [https://perma.cc/458G-YA4X] (last visited Mar. 5, 2023). For example, we advocated for equitable coastal access before the California Coastal Commission, fought for management and regulation of marine plastic pollution before the United Nations Environment Programme, and participated in the Ocean Justice Forum.
23. *Id.*
24. Cal. Exec. Order No. N-82-20; *Our Recommendation for California's Strategies to Conserve 30 Percent of the State's Land and Coastal Waters by 2030*, Azul (Aug. 17, 2021), https://azul.org/en/blog/azul-30x30-california-letter-expectations/ [https://perma.cc/6GAY-F6GR].
25. A.B. 2616, 2015-2016 Reg. Sess. (Cal. 2016).
26. A.B. 3030, 2019-2020 Reg. Sess. (Cal. 2020).
27. Matthew Jurjonas & Erin Seekamp, *"A Commons Before the Sea": Climate Justice Considerations for Coastal Zone Management*, 12 Climate & Dev. 199, 199 (2020).
28. *See* Anne R. Siders, *Social Justice Implications of US Managed Retreat Buyout Programs*, 152 Climatic Change 239, 239 (2019); R. Dean Hardy et al., *Racial Coastal Formation: The Environmental Injustice of Colorblind Adaptation Planning for Sea-Level Rise*, 87 Geoforum 62, 71 (2017).
29. Mathew E. Hauer et al., *Millions Projected to Be at Risk From Sea-Level Rise in the Continental United States*, 6 Nature Climate Change 691, 691 (2016); Jordan Rappaport & Jeffrey D. Sachs, *The United States as a Coastal Nation*, 8 J. Econ. Growth 5, 5 (2003).
30. Craig Anthony (Tony) Arnold, *Legal Castles in the Sand: The Evolution of Property Law, Culture, and Ecology in Coastal Lands*, 61 Syr. L. Rev. 213, 229–30, 234 (2011) (describing distinctive features and functions of coastal lands and ecosystems as well as the "especially intense" effects of land development on coastal zones).
31. Talal Al-Awadhi et al., *An Integrated Approach to Coastal Zone Management to Control Development and Ensure Sustainability in a Rapidly Increasing Coastal Urban Environment: The Sultanate of Oman*, 15 Env't Just. 214, 215 (2022).
32. *See* Mark S. Davis & Christopher J. Dalbom, *Taken by Storm—Property Rights and Natural Disasters*, 29 Tul. Env't L.J. 287, 287–88 (2017).
33. *See* Marc R. Poirier, *Environmental Justice and the Beach Access Movements of the 1970s in Connecticut and New Jersey: Stories of Property and Civil Rights*, 28 Conn. L. Rev. 719, 720–21 (1996).
34. *See* Georgina G. Gurney et al., *Equity in Environmental Governance: Perceived Fairness of Distributional Justice Principles in Marine Co-Management*, 124 Env't Sci. & Pol'y 23, 27 (2021).
35. M. Luisa Martínez et al., *The Coasts of Our World: Ecological, Economic, and Social Importance*, 63 Ecological Econ. 254, 257 (2007).
36. Rob Nixon, Slow Violence and the Environmentalism of the Poor 216 (2011).
37. *See* Kyle Whyte, *Settler Colonialism, Ecology, and Environmental Injustice*, 9 Env't & Soc'y 125, 129 (2018).
38. Stephen Axon et al., *The US Blue New Deal: What Does It Mean for Just Transitions, Sustainability, and Resilience of the Blue Economy?*, 188 Geographical J. 1, 3 (2022).
39. *See* Jurjonas & Seekamp, *supra* note 27.
40. Robert R. Twilley et al., *Co-Evolution of Wetland Landscapes, Flooding, and Human Settlement in the Mississippi River Delta Plain*, 11 Sustainability Sci. 711, 728 (2016).
41. *See* Scott C. Doney et al., *Ocean Acidification: The Other CO_2 Problem*, 1 Ann. Rev. Marine Sci. 169, 179–80 (2009).
42. Kennedy Warne, Let Them Eat Shrimp: The Tragic Disappearance of the Rainforests of the Sea 65 (2011).
43. *See, e.g.*, Eileen Maura McGurty, *Warren County, NC, and the Emergence of the Environmental Justice Movement: Unlikely Coalitions and Shared Meanings in Local Collective Action*, 13 Soc'y & Nat. Res. 373, 375–76 (2000); John R. Clark, Coastal Ecosystem Management: A Technical Manual for the Conservation of Coastal Zone Resources 167 (1977).
44. National Environmental Policy Act of 1969 § 102(2)(c), 42 U.S.C. § 4332(c).

tific understanding and our ability to achieve it. For example, the First National People of Color Leadership Summit in 1991 affirmed the "ecological unity and interdependence of all species," the "right to be free from ecological destruction," and "the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature."[45] Similarly, coastal ecosystem management shares the environmental justice movement's concern for "ensur[ing] the health of the natural world for present and future generations."[46] Coastal conservation and environmental justice were rarely pursued together in a systematic way. Yet, in California, where we carry out much of our work, the two collide with increasing frequency and urgency:

- Thirty years ago, when the Principles of Environmental Justice were drafted, high-profile attempts to manage coastal ecosystems did not include Black, Indigenous, and People of Color communities; they broke down in dramatic fashion (e.g., Sacramento-San Joaquin River Delta).[47]
- Twenty years ago, agencies that manage coastal resources were among the first to develop environmental justice policies (e.g., California State Lands Commission).[48]
- Fifteen years ago, the number and complexity of environmental justice issues that coastal agencies recognized as being within their purview exploded, without a similar increase in resources or legal authority.
- Ten years ago, coastal agencies were further tasked with implementing a legislative commitment to a human right to water.[49]
- Three years ago, coastal agencies began to adopt resolutions condemning systemic racism, directing hundreds of staff, divisions, offices, and programs to address the state's role in creating and perpetuating inequities of access, affordability, quality, and rights to water and related natural and cultural resources.[50]
- Two years ago, through its Justice40 Initiative, the new Administration shifted its attention to maximizing the *benefits* of investment in disadvantaged communities, such as access to green space, parks, trails, rivers, lakes, coastal areas, and drinking water.[51] This continued a trend begun earlier in states such as California.[52]

Coastal and marine ecosystems are vital to the lives of our families and communities. They play an increasing role in the pursuit of environmental justice. For example, coastal regions, including public trust lands, offer unique leverage over entire industries, including several that receive much of the movement's attention in California: oil and gas production and refining, ports, goods movement, warehousing, agriculture, and landfills and waste disposal.[53] Public trust lands in California alone include "four million acres of tide and submerged lands and the beds of natural and navigable rivers, streams, lakes, bays, [and] estuaries," and their ecological integrity and influence over lands further inland.[54] The Black, Indigenous, and People of Color communities that these lands often support are not reducible to standard indicators of "disadvantaged communities" in screening tools such as CalEnviroScreen.[55]

Azul regularly advances a strong definition of conservation: Conserved areas should (a) enable monitoring and stewardship through enduring measures; (b) support thriving biodiversity; (c) contribute to climate resilience; (d) provide ecosystem services; (e) protect, restore, and enhance the area's natural character, resources, and functions; (f) allow for equitable access by Black, Indigenous, and People of Color communities; (g) respect tribal sovereignty, rights, and stewardship; and (h) align with the International Union for Conservation of Nature's equity framework for protected areas.[56]

Azul contributes to advisory committees and working groups, drafts and revises legislation and environmental justice policies, and analyzes and comments on impacts as coastal agencies carry out their core functions, such as leasing lands for industrial purposes, regulating marine oil terminals, planning for sea-level rise, and overseeing use of public trust lands at ports, harbors, and waterfront areas.[57] For example, Azul was one of eight environmental organizations to contribute recommendations for research and policy design as part of the California State Lands Commission's Environmental Justice Policy update.[58] Here is a sample of unmet governance needs that we raised in a single document:

45. First Nat'l People of Color Env't Leadership Summit, Principles of Environmental Justice (Oct. 27, 1991), https://www.ejnet.org/ej/principles.pdf [https://perma.cc/WS6Q-5WBS] [hereinafter Principles of Environmental Justice].
46. *Id.*; *see also* Int'l Climate Just. Network, Bali Principles of Climate Justice (Aug. 29, 2002).
47. Fraser M. Shilling et al., *Marginalization by Collaboration: Environmental Justice as a Third Party in and Beyond CALFED*, 12 Env't Sci. & Pol'y 694, 695, 702 (2009).
48. *See, e.g.*, Cal. State Lands Comm'n, Consider the Adoption of an Amended Environmental Justice Policy (2002), https://www.slc.ca.gov/Meeting_Summaries/2002_Documents/10-01-02/Items/100102R71.pdf [https://perma.cc/2JU9-HXRL].
49. Cal. Water Code § 106.3 (West 2013).
50. *See, e.g.*, Cal. State Water Res. Control Bd. Resolution No. 2021-0050: Condemning Racism, Xenophobia, Bigotry, and Racial Injustice and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access, and Anti-racism (2021), https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2021/rs2021-0050.pdf [https://perma.cc/3TJW-3XHQ].
51. *See* Exec. Order No. 14008, *supra* note 2, at 7631–32.
52. S. 535, 2011-2012 Reg. Sess. (Cal. 2012).
53. *See* Abby Newman & Sheri Pemberton, Cal. State Lands Comm'n, Informational Report on Efforts to Overhaul the Commission's Environmental Justice Policy 4, 7 (2018).
54. Cal. State Lands Comm'n, 2021–2025 Strategic Plan 4, 16 (2021).
55. *CalEnviroScreen 4.0*, Cal. Off. of Env't Health Hazard Assessment (Dec. 1, 2022), https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 [https://perma.cc/RLU4-ZZGF].
56. *See* Letter from Marcela Gutiérrez-Graudiņš, Executive Director, Azul, to Secretary Wade Crowfoot, California Natural Resources Agency (July 30, 2021) (on file with authors).
57. *Making Waves, Our Victories*, Azul (2022) (on file with authors).
58. Cal. Env't Just. Working Grp., Recommendations for the State Lands Commission Environmental Justice Policy Update 3 (2018).

- Design pollution-reduction strategies for the logistics industry rather than for individual ports.
- Study the nexus between environmental justice and authorities related to ports and oil and gas production.
- Develop screening tools that are tailored to coastal lands and communities and that account for climate vulnerability, sea-level rise, public access, Indigenous communities, and sacred lands.
- Develop an inventory of actions that an agency can take related to coastal land use, including actions to prevent pollution and emissions increases and include ways to benefit impacted communities.
- Study the extent to which sea-level rise exacerbates differential coastal access across racial and income lines and consider these issues in permitting commercial uses of public trust lands and other resources.
- Account for upstream (e.g., quality of crude oil, carbon intensity) and downstream (e.g., on communities and coastal regions) impacts of the expansion or renewal of marine and coastal oil terminals and pipelines.
- Study the neighborhood-scale impacts of ports and the freeways and railways used to transport goods from shipping terminals to inland warehouses and distribution centers.[59]

Our recommendations spanned such topics as the state's public trust obligations, climate adaptation, oil and gas operations, ports and transportation, public access, conservation, clean energy, and water pollution. Our recommendations spoke to the justice gaps that plague coastal conservation research.[60] Yet, agencies lack the capacity to consider our proposals, carry out cumulative impact analysis, design precautionary approaches, or ensure that their actions comply with state and federal civil rights laws.[61] Add the pressing research and policy development needs of similarly situated boards and departments, such as the State Water Resource Control Board's attempts to identify rural and unincorporated areas and communities where 90% of drinking water violations occur, and the unfinished work stretches beyond the horizon.[62] Climate change, carbon transitions, and decommissioning oil and gas facilities further increase demands placed on overstretched and understaffed agencies whose work is closely tied to the coastal zone.

59. *See id.* at 9–10, 12–13.
60. *See* Paul Sandifer & Geoffrey I. Scott, *Coastlines, Coastal Cities, and Climate Change: A Perspective on Urgent Research Needs in the United States*, 8 Frontiers Marine Sci. 1, 6 (2021).
61. Interview with Cal. State Reg. Offs. (July 29, 2022) (on file with authors).
62. *See* Cal. Water Bds., Drinking Water Needs Assessment: Informing the 2021-22 Safe & Affordable Drinking Water Fund Expenditure Plan 138 (2021), https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/needs/2021_needs_assessment.pdf [https://perma.cc/CQ3T-4CZL].

III. Coastal Justice Priorities

Informed by over a decade of collaboration with communities and agencies alike to address these challenges, we advance priorities to guide development, design, and implementation of federal and state coastal policy and conservation commitments. Our priorities should serve to supplement and correct for those put forward by programs such as America the Beautiful. Targets such as "30x30" are vague and insufficient.[63] For example, what will constitute a conserved or protected area, landscape, or ecosystem is unclear. Under the Protected Area Database of the United States, nearly one-third of terrestrial areas are considered "protected" to some degree—13% GAP 1 and 2; 18% GAP 3.[64] Second, ambiguity invites bias to shape the program. Baseline levels of protection reflect "a large bias toward protecting lands and ecosystems in Alaska and other remote, sparsely inhabited areas."[65] Choice among area-, landscape-, species-, and carbon-based approaches[66] to meet the Administration's target introduces another opportunity for bias. Third, the best available ecological and value data exist for terrestrial, as opposed to freshwater or marine regions.[67] Fourth, links between conservation and human health and well-being are underexplored, particularly in marine and freshwater biomes.[68] Fifth, conservation research has only recently turned to matters of equity; access is often used as a proxy.[69]

The biases exist against a backdrop of national parks, wilderness areas, and laws such as the Antiquities Act, which restricted or removed Indigenous Peoples and communities of color from vital lands and waters.[70] With these and other long-standing biases in mind, conservation and other coastal policies and programs must incorporate what we learned from prior attempts to identify "disadvantaged" or "environmental justice communities." They must conform to principles of data and design justice. They must account for historical injustices in the coastal zone and incorporate a broader conception of justice than traditional state and federal environmental justice policies embrace. They must do no harm by facilitating compliance with state and federal civil rights laws. They must encourage expansive and creative use of existing legal authorities. And they must leverage resources to provide the research, community engagement, and institutional support necessary to achieve coastal and marine conservation that agencies are charged with carrying out.

63. Eric Dinerstein et al., *A Global Deal for Nature: Guiding Principles, Milestones, and Targets*, 5 Sci. Advances 2869, 2878 (2019).
64. U.S. Geological Surv., *Protected Areas Database of the United States (PAD-US) 2.1* (2020), https://www.sciencebase.gov/catalog/item/5f186a2082cef313ed843257 [https://perma.cc/3DVN-8TEK].
65. B. Alexander Simmons et al., *Delivering on Biden's 2030 Conservation Commitment* 5 (B.U. Glob. Dev. Pol'y Ctr., Working Paper No. 001, 2021).
66. *Id.* at 12.
67. *See id.* at 4.
68. *See* Madeleine C. McKinnon et al., *What Are the Effects of Nature Conservation on Human Well-Being? A Systematic Map of Empirical Evidence From Developing Countries*, 5 Env't Evidence 8, 22 (2016).
69. *See* Rachel S. Friedman et al., *How Just and Just How? A Systematic Review of Social Equity in Conservation Research*, 13 Env't Rsch. Letters at 2 (2018).
70. *See* Sarah Krakoff, *Public Lands, Conservation, and the Possibility of Justice*, 53 Harv. C.R.-C.L.L. Rev. 213, 218–39 (2018).

A. *Avoid Community Erasure*

More than a quarter-century ago, Executive Order No. 12898 directed 17 federal agencies to identify and address, where appropriate, the "disproportionately high and adverse human health or environmental effects" of their programs on "low-income" and "minority" populations.[71] It quickly became evident that agencies lacked a clear, consistent, and valid approach to answer the questions raised by this directive: What are the bounds of an impacted community? What is the nature of cumulative impacts experienced within the community? After *Toxic Wastes and Race in the United States*[72] was published by the United Church of Christ Commission for Racial Justice, researchers offered reductive definitions of "environmental justice community."[73] They relied on mashups of zip codes or census tracts.[74] The courts followed suit in Equal Protection cases.[75] Agencies continue to struggle with the task of identifying environmental justice communities, particularly in energy infrastructure cases.[76] Many spaces, such as farmworker housing in the path of pesticide drift, urban highway rights-of-way, hotspots created by cap-and-trade programs, and rural agricultural homes, are excluded from prevailing definitions. At times, an entire community is left out of an environmental impact assessment, permitting, monitoring, or enforcement proceeding.[77]

Repeatedly, the U.S. Government Accountability Office ("GAO") and Inspector General offices find these definitional problems and bring them to an agency's attention.[78] For example, in 2004, an EPA Office of the Inspector General report determined that EPA failed to adequately identify "environmental justice areas."[79] EPA regions relied on different definitions and thresholds of low-income and minority populations.[80] This limited the Agency's ability to track progress in meeting Executive Order No. 12898 requirements and resulted in regional inequities: "Due to regional variations, populations in some states do not receive the same level of environmental justice action as in other states."[81] In 2011, the Director of EPA's Office of Environmental Justice made a shocking admission. In response to an investigation into use of American Reinvestment and Recovery Act funds following the Global Financial Crisis, they argued: "There is an urgent need for EPA to adopt a consistent approach to identifying minority, low-income, and tribal/indigenous areas disproportionately burdened by environmental and health concerns."[82] With regards to identifying communities most in need of environmental protection, EPA was running in place.

Increasingly, agencies address the twin concerns of identifying communities and cumulative impacts together.[83] For example, California law features dozens of references to "disadvantaged" and "environmental justice" communities.[84] It mandates that agencies such as the California Air Resources Board[85] and Department of Toxic Substances Control[86] consider cumulative impact as part of their core functions. Armed with a working definition of cumulative impact,[87] CalEPA turned to methodology in *Cumulative Impact: Building a Scientific Foundation*.[88] It described a screening tool that could identify a disadvantaged community and serve as a proxy for its cumulative impacts.[89] The Environmental Justice Screening Method, designed by researchers and residents in California,[90] underwent further development by the Office of Environmental Health Hazard Assessment ("OEHHA") and emerged as CalEnviroScreen.[91] It was first used to identify communities to receive funding under California's climate law.[92] Now in its fourth version, its use has expanded dramatically.[93] And it inspires the design of screening tools in more than one-third of U.S. states to identify overburdened communities.[94]

71. Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 16, 1994) (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).
72. *See generally* Comm'n for Racial Justice United Church of Christ, Toxic Wastes and Race in the United States (1987).
73. Laura Pulido, *A Critical Review of the Methodology of Environmental Racism Research*, 28 Antipode 142 n.8 (1996).
74. Paul Mohai & Robin Saha, *Which Came First, People or Pollution? Assessing the Disparate Siting and Post-Siting Demographic Change Hypotheses of Environmental Injustice*, 10 Env't Rsch. Letters at 2 (2015).
75. *See* R.I.S.E., Inc. v. Kay, 768 F. Supp. 1144, 1146 (E.D. Va. 1991), *aff'd mem.*, 977 F.2d 573 (4th Cir. 1992); E. Bibb Twiggs Neighborhood Ass'n v. Macon-Bibb Cnty. Plan. & Zoning Comm'n, 706 F. Supp. 880, 881 (M.D. Ga. 1989), *aff'd*, 896 F.2d 1264 (11th Cir. 1989); Bean v. Sw. Waste Mgmt. Corp., 482 F. Supp. 673, 677 (S.D. Tex. 1979), *aff'd mem.*, 782 F.2d 1038 (5th Cir. 1986).
76. *See, e.g.*, Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs, 255 F. Supp. 3d 101, 137 (D.D.C. 2017).
77. *See, e.g.*, Goshen Rd. Env't Action Team v. U.S. Dep't of Agric., No. 98-2102, 1996 WL 19963, at *1 (4th Cir. Dec. 16, 1996).
78. *See, e.g.*, U.S. Gov't Accountability Off., GAO-12-77, Environmental Justice: EPA Needs to Take Additional Actions to Help Ensure Effective Implementation 24 (2011).
79. Off. of the Inspector Gen., U.S. Env't Prot. Agency, Report No. 2004-P-00007, EPA Needs to Consistently Implement the Intent of the Executive Order on Environmental Justice 6 (2004).
80. *Id.*
81. *Id.* at 7.
82. Off. of the Inspector Gen., U.S. Env't Prot. Agency, Report No. 11-R-0208, EPA Faced Multiple Constraints to Targeting Recovery Act Funds 24 (2011) (EPA "did not have a systematic methodology with specific definitions, criteria, or tools to identify communities that are economically disadvantaged, ensure consistency among program offices or regions, and evaluate the impact of funding decisions on disadvantaged communities").
83. *See EJScreen: Environmental Justice Screening and Mapping Tool*, U.S. Env't Prot. Agency, www.epa.gov/ejscreen [https://perma.cc/463Z-86KF] (Apr. 1, 2022).
84. *See, e.g.*, Cal. Health & Safety Code § 39711 (West 2012).
85. *See* Cal. Health & Safety Code § 42705.5(b) (West 2017).
86. Cal. Health & Safety Code § 25200.21 (West 2015).
87. *See* Cal. Off. of Env't Health Hazard Assessment & Cal. Integrated Waste Mgmt. Bd., Call for Applications to the Cumulative Impacts and Precautionary Approaches Work Group (2007).
88. *See generally* George Alexeef et al., Cal. Env't Protect. Agency & Off. of Env't Health Hazard Assessment, Cumulative Impacts: Building a Scientific Foundation (2010).
89. *See id.* at 52.
90. *See, e.g.*, James L. Sadd et al., *Playing It Safe: Assessing Cumulative Impact and Social Vulnerability Through an Environmental Justice Screening Method in the South Coast Air Basin*, 8 Int'l J. Env't Rsch. & Pub. Health 1441, 1443 (2011).
91. Charles Lee, *Another Game Changer in the Making? Lessons From States Advancing Environmental Justice Through Mapping and Cumulative Impact Strategies*, 51 ELR 10676, 10677 (Aug. 2021).
92. *See* California Global Warming Solutions Act of 2006 § 1(a), (g); S. 535, 2011-2012 Reg. Sess. (Cal. 2012) (codified at Cal. Health & Safety Code §§ 38500 et seq.).
93. *See CalEnviroScreen 4.0*, Cal. Off. of Env't Health Hazard Assessment (Dec. 1, 2022), https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 [https://perma.cc/CGJ6-8MUZ].
94. Charles Lee, *Confronting Disproportionate Impacts and Systemic Racism in Environmental Policy*, 51 ELR 10207, 10214 (Mar. 2021).

If conservation policy aims to "address[ ] climate change and environmental injustices,"[95] it must be responsive to concerns raised during the design and update of screening tools such as CalEnviroScreen, National Environmental Justice Advisory Council critiques of EPA screening tools such as EJSEAT and EJScreen, and the White House's Climate and Economic Justice Screening Tool.[96] These include:

- Screening tools to advance conservation and restoration must track reductions in cumulative impacts to communities that rely on coastal and marine resources and ecosystems.
- No set of variables can fully capture the range of cumulative impacts experienced by coastal communities. Therefore, screening tools should enable further research and sensitivity analysis of variables that are missing entirely or lack the appropriate spatial or temporal resolution in current and anticipated versions.
- To facilitate analysis of conservation, stewardship, resilience, and other roles played by coastal communities, screening tools must allow for regional analysis, trend analysis, and narrative analysis. Methodology should be designed to allow for regional rankings to help local and regional governments analyze data from a local or regional perspective.[97]
- Screening tools should enable indicators of disproportionate impact of marine and coastal spatial planning and development according to race and social vulnerability; each indicator may only be applicable to certain types of disadvantaged or environmental justice communities.
- Screening tools consistently fail to identify areas smaller than census tracts, including urban neighborhoods and rural settlements, as well as tribal lands and ecosystems upon which Black, Indigenous, and People of Color communities rely.
- Screening tools have even greater difficulty identifying communities that depend on and are disproportionately impacted by threats to water quality and coastal resources. For example, CalEnviroScreen is of limited use in identifying rural, unincorporated areas that are less resilient to climate impacts, more likely to depend on groundwater, and link to public water systems with less than 500 connections.
- Federal and state 30x30 commitments present an opportunity to identify localized threats to coastal and marine ecosystem integrity (e.g., toxics release indicators that include data on land and water contamination, as opposed to the traditional focus on air emissions indicators).
- Early planning documents for CalEnviroScreen included caveats with regards to the mapping tool's compatibility with agency practice. For example, it was not meant to be comprehensive, it was not sensitive to small changes in impact, it could not determine causality with regards to health impacts, and it should not be used for regulatory purposes without the development of appropriate guidelines. Similarly, agencies with jurisdiction over coastal communities should prepare guidelines to enable and encourage use of screening tools in state and local decisionmaking, such as planning, permitting, siting, enforcement, and remediation.
- Screening tools should not ignore the ecological impact of coastal industries that disproportionately impact Black, Indigenous, and People of Color communities, such as oil and gas development. They should include biotic and abiotic magnifiers of landscape-scale disturbance.[98] They should include both deterministic (e.g., terrestrial and aquatic fragmentation) and probabilistic (e.g., chemical spills) effects.[99] And they should allow for life-cycle analysis of industry-specific disturbance (e.g., from landscape clearing to well abandonment).
- Screening tools should provide for dynamic assessment of ecosystem health scores influenced by industrial activity within a given landscape or watershed (e.g., landcover loss, hectares of disturbance from buildout of permitted industrial land uses, median summer stream flow, % impervious surface cover, terrestrial and aquatic fragmentation effects).
- Screening tools should enable analysis of indicators that drive ecosystem health scores at the landscape or watershed scale at either a single point in time or over a selected period. They should provide for sensitivity analysis of indicators to enable prioritization of additional conservation actions.
- Screening tools should note data types to identify data gaps and encourage trend detection (e.g., Type I allow for trend detection, Type II require more data collection or data analysis to assess trends, Type III require a data collection system as there is no ongoing data collection).

95. Dep't of Interior, Request for Information & Notice of Public Listening Sessions, 87 Fed. Reg. 235 (Jan. 4, 2022).
96. Nat'l Env't Just. Advisory Council, Nationally Consistent Environmental Justice Screening Approaches 1 (2010); Jean Chemnick & Kevin Bogardus, *Missing From White House EJ Screening Tool: Race*, E&E News: Greenwire (Feb. 17, 2022, 1:24 PM), https://www.eenews.net/articles/missing-from-white-house-ej-screening-tool-race/ [https://perma.cc/WJP6-8EXV].
97. Letter from Tiffany Eng, Green Zones Project Manager, Cal. Env't Just. All. et al., to Cal. Off. of Env't Health Hazard Assessment (May 14, 2021).
98. *See, e.g.*, Terry Slonecker & Lesley Milheim, *Landscape Disturbance From Unconventional and Conventional Oil and Gas Development in the Marcellus Shale Region of Pennsylvania, USA*, 2 Env'ts 200, 201, 206 (2015).
99. *See, e.g.*, Sara Souther et al., *Biotic Impacts of Energy Development From Shale: Research Priorities and Knowledge Gaps*, 12 Frontiers Ecology & Env't 330, 334, 337 (2014).

- Federal and state agencies should make clear the assumptions and weighting decisions that inform screening tool data methodology, mathematical formulae, and calculations to generate spatial representation of indicators.
- Screening tools should allow for users to identify "disadvantaged communities" through analytic approaches beyond the Council on Environmental Quality's eight combinatory criteria released in support of its Climate and Economic Justice Screening Tool (e.g., 90th percentile expected building loss + low-income; 90th percentile proximity to hazardous waste facilities + low-income). For example, the beta version of CEQ's screening tool does not speak to coastal-social vulnerability, risks, or impacts, apart from a wastewater discharge indicator.
- To aid in identifying disadvantaged communities, screening tools should model data aggregation, indicator weight, and census tract scoring after the New York Climate Justice Working Group's approach to tracking future benefits of state investment for the Climate Leadership and Community Protection Act.[100]
- Screening tools should enable ground-truthing of input data sources including locational accuracy for land uses, facilities, and hazards (location inaccuracy and database error are substantial in databases that inform screening tools such as CalEnviroScreen).[101]
- Screening tools should include race and ethnicity indicators among demographic variables. Race is a strong predictor of individual and community health (e.g., access to clean water) as well as closely linked to the structural determinants of community and ecosystem health. Racism is an acknowledged public health crisis.[102] The mere inclusion of racial variables in screening tools does not confer a benefit or service based on race and is therefore not subject to strict scrutiny analysis under the U.S. Constitution.[103] In addition, including race and ethnicity indicators can facilitate conservation program compliance with civil rights laws.
- Finally, input from "a wide range of stakeholders"[104] must avoid recreating dynamics that plagued earlier state and federal environmental justice policy reliance on advisory committees (e.g., National Environmental Justice Advisory Council, CalEPA Advisory Committee on Environmental Justice). These as well as local advisory groups and steering committees invest substantial time and labor but rarely reduce environmental hazards. Community contributions are often ignored, as with the CalEPA Cumulative Impact/Precautionary Approaches Work Group's recommendations regarding the precautionary principle and cumulative pollution and the California Air Resource Board Environmental Justice Advisory Committee's proposed early action measures under AB 32. Any procedure for community input must respect community science and knowledge, embodied experience, time, and labor.

B. Account for Historical Injustices and Policy Artifacts in Coastal Zones

Federal and state conservation policy must enable stakeholders to identify overburdened and underserved communities within the coastal zone and track cumulative impacts. But to truly gauge progress in achieving objectives across a "continuum of conservation," it must also account for the role of policy artifacts—historical policies with ongoing effects—in degrading or rendering inaccessible coastal resources upon which Black, Indigenous, and People of Color communities rely. For example, CalEnviroScreen represents a second generation of environmental justice screening tools.[105] It incorporates data sets for community exposure, effects, sensitive populations, and socioeconomic status.[106] But there are calls for geospatial tools to go further. There is a vibrant literature on the impacts of structural racism on community health, including in coastal regions (e.g., interrelationships between residential segregation, health, and disaster-related losses due to the *Deepwater Horizon* oil spill).[107]

These *intercategorical*[108] studies look at the combined effects of multiple forms of structural racism. Policy artifacts include, but are not limited to, spatially concentrated housing and residential disadvantage, education and health care segregation, and discrimination in the provision of government benefits.[109] For example, CalEPA's racial equity team overlayed CalEnviroScreen maps with California Home Owners' Loan Corporation designations from the 1930s to explore the ongoing effects

100. *See* Emily Pontecorvo, *New York Environmental Justice Leaders Propose New Definition for "Disadvantaged Communities,"* Grist (Feb. 2, 2022), https://grist.org/equity/new-york-environmental-justice-leaders-propose-new-definition-for-disadvantaged-communities/ [https://perma.cc/4BFT-XEX4].

101. *See* James L. Sadd et al., *Ground-Truthing Validation to Assess the Effect of Facility Locational Error on Cumulative Impacts Screening Tools*, 2015 Geography J. 1, 5–6 (2015).

102. *See* Kehinde Andrews, *Racism Is the Public Health Crisis*, 397 The Lancet 1342, 1342–43 (2021).

103. David F. Coursen, *Equal Protection, Strict Scrutiny, and Actions to Promote Environmental Justice*, 39 ELR 10201, 10203 (Mar. 2009).

104. Request for Information & Notice of Public Listening Sessions, 87 Fed. Reg. 235, 235 (Jan. 4, 2022).

105. Charles Lee, *A Game Changer in the Making? Lessons From States Advancing Environmental Justice Through Mapping and Cumulative Impact Strategies*, 50 ELR 10203, 10206–07 (Mar. 2020).

106. *See CalEnviroScreen 4.0*, *supra* note 93.

107. *See* Margaret M. Weden et al., *Health Disparities in the U.S. Gulf Coast: The Interplay of Environmental Disaster, Material Loss, and Residential Segregation*, 14 Env't Just. 110, 110 (2021).

108. *See, e.g.*, Camila H. Alvarez & Clare Rosenfeld Evans, *Intersectional Environmental Justice and Population Health Inequalities: A Novel Approach*, 269 Soc. Sci. & Med. 113559, 113559 (2021); Raoul S. Liévanos et al., *An Intercategorical Ecology of Lead Exposure: Complex Environmental Health Vulnerabilities in the Flint Water Crisis*, 18 Int'l J. Env't Rsch. & Pub. Health 2217 (2021).

109. *See, e.g.*, Vanessa Lopez-Littleton & Carla Jackie Sampson, *Structural Racism and Social Environmental Risk: A Case Study of Adverse Pregnancy Outcomes in Louisiana*, *in* Three Facets of Public Health and Paths to Improvements at 357 (1st ed. 2020).

of redlining and housing discrimination on cumulative environmental impact.[110]

Similarly, federal and state conservation policy should allow for exploration of systemic racism indicators that influence quality of life and ecosystem health in coastal communities, such as exclusionary and expulsive zoning,[111] redlining,[112] legacy contamination,[113] legacy infrastructure (e.g., oil and gas pipelines, abandoned wells),[114] eco-gentrification,[115] flood insurance,[116] dredged canals and long-standing practices to provide access to extractive sites that limit overall access to the coast,[117] coastal hardening practices,[118] and policies that increase heat island effects, flooding, na-tech frequency, and other climate impacts. This is uniquely true in Gulf Coast communities, such as along the Mississippi River Chemical Corridor between New Orleans and Baton Rouge[119] and the Houston Ship Channel.[120] A rubric to explore policy artifacts that shape coastal and marine communities was designed by scholars at the Institute for the Oceans and Fisheries at the University of British Columbia.[121] Through an exhaustive review, they noted 10 forms of social injustice due to "blue growth," including generations of ocean commodification and development.[122] We list them in Table 1 (see next page), along with sample indicators to track their reversal.

C. *Affirmatively Enforce Antidiscrimination and Civil Rights Laws*

Agencies with jurisdiction over coastal ecosystems, public trust lands at ports, harbors, and waterfront areas, and related resources further inland, are subject to civil rights laws such as Title VI of the Civil Rights Act of 1964[123] and California Government Code Section 11135.[124] Programmatic staff at federal, state, city, and county agencies lack the means to ensure compliance with civil rights laws.[125] Title VI prohibits discrimination by a recipient of federal funds according to race, color, or national origin.[126] For example, a recipient cannot discriminate in "purpose or effect" in administering its programs or in the siting of a facility.[127] While the U.S. Supreme Court eliminated a private right-of-action for communities to enforce disparate impact regulations under Title VI,[128] any person may bring an administrative complaint that alleges discriminatory effects of a program, policy, or activity.[129] In addition, agencies have the authority to bring affirmative compliance actions against recipients.[130] For example, EPA claims that it will use a broad range of sources to determine whether they "demonstrate disparate effects based on race, color, and/or national origin or are indicative of disparate treatment."[131] Unfortunately, communities have, for a quarter-century, raised questions regarding how, specifically, an agency will respond to an administrative complaint or conduct an affirmative compliance investigation.[132]

One problem with existing Title VI programs lies in an agency's intent to maximize discretion as it answers questions such as what is "adverse," "disparate," "significant," or "cognizable under a recipient's authority."[133] Another prob-

110. *Pollution and Prejudice: Redlining and Environmental Injustice in California*, Cal. Env't Prot. Agency (Aug. 16, 2021), https://storymaps.arcgis.com/stories/f167b251809c43778a2f9f040f43d2f5 [https://perma.cc/9AB3-2UCS].
111. *See, e.g.*, Benjamin Rajotte, *Environmental Justice in New Orleans: A New Lease on Life for Title VIII?*, 21 Tul. Env't L.J. 51 (2007).
112. *See generally* Anthony Nardone et al., *Historic Redlining and Urban Health Today in U.S. Cities*, 13 Env't Just. 109 (2020).
113. *See generally* Robin Kundis Craig, *Cleaning Up Our Toxic Coasts: A Precautionary and Human Health-Based Approach to Coastal Adaptation*, 36 Pace Env't L. Rev. 1 (2018).
114. *See generally* Scott A. Hemmerling et al., *Tracing the Flow of Oil and Gas: A Spatial and Temporal Analysis of Environmental Justice in Coastal Louisiana From 1980 to 2010*, 14 Env't Just. 134 (2021).
115. *See generally* Sarah Dooling, *Ecological Gentrification: A Research Agenda Exploring Justice in the City*, 33 Int'l J. Urban & Reg'l Rsch. 621 (2009).
116. Alice Kaswan, *Domestic Climate Change Adaptation and Equity*, 42 ELR 11125, 11129 (Dec. 2012).
117. *See generally* Ricardo Olea & James Coleman, *A Synoptic Examination of Causes of Land Loss in Southern Louisiana as Related to the Exploitation of Subsurface Geologic Resources*, 30 J. Coastal Rsch. 1025 (2014).
118. *See, e.g.*, Anne R. Siders, *Social Justice Implications of US Managed Retreat Buyout Programs*, 152 Climatic Change 239, 240 (2019).
119. Sara Sneath, *Louisiana Shell Refinery Left Spewing Chemicals After Hurricane Ida*, Guardian (Sept. 4, 2021, 6:00 AM), https://www.theguardian.com/us-news/2021/sep/04/louisiana-shell-refinery-toxic-chemicals-hurricane-ida [https://perma.cc/5YUJ-9Q74].
120. Jennifer A. Horney et al., *Comparing Residential Contamination in a Houston Environmental Justice Neighborhood Before and After Hurricane Harvey*, 13 PLoS One, at 3 (2018).
121. *See* Nathan J. Bennett et al., *Blue Growth and Blue Justice* (Inst. for the Oceans & Fisheries, Working Paper No. 2020-02, 2020), https://fisheries.sites.olt.ubc.ca/files/2020/06/Take2-2020-02-WP_Blue-Growth-and-Blue-Justice-IOF-Working-Paper.pdf [https://perma.cc/EVT8-LL95].
122. *See generally* Nathan James Bennett et al., *Blue Growth and Blue Justice: Ten Risks and Solutions for the Ocean Economy*, 125 Marine Pol'y 104387, 104387 (2021); Nathan J. Bennett, *Navigating a Just and Inclusive Path Towards Sustainable Oceans*, 97 Marine Pol'y 139, 141 (2018).
123. *See* Civil Rights Act of 1964 § 602, 42 U.S.C. § 2000d-1.
124. *See* Cal. Gov't. Code § 11135.
125. Interview with Cal. State Reg. Offs. (July 29, 2022) (on file with authors).
126. *See* Civil Rights Act of 1964 § 602, 42 U.S.C. § 2000d.
127. 40 C.F.R. § 7.35(c):
> A recipient shall not choose a site or location of a facility that has the purpose or effect of excluding individuals from, denying them the benefits of, or subjecting them to discrimination under any program or activity to which this part applies on the grounds of race, color, or national origin or sex; or with the purpose or effect of defeating or substantially impairing the accomplishment of the objectives of this subpart.

128. *See* Alexander v. Sandoval, 532 U.S. 275, 293 (2001).
129. Olatunde C.A. Johnson, *Lawyering That Has No Name: Title VI and the Meaning of Private Enforcement*, 66 Stan. L. Rev. 1293, 1297–98 (2014).
130. *See* 40 C.F.R. § 7.115(a).
131. U.S. Env't Prot. Agency, External Civil Rights Compliance Office (ECRCO) Process and Criteria for Prioritizing and Selecting Affirmative Compliance Reviews 3 (2022) [hereinafter ECRCO Process].
132. With EPA, questions were raised in February 1998, when the Office of Civil Rights issued an *Interim Guidance for Investigating Title VI Administration Complaints Challenging Permits*; in March 1999, in a report by a Title VI Implementation Advisory Committee; in August 2000, when EPA issued its *Draft Revised Guidance for Investigating Title VI Administrative Complaints Challenging Permits*; and every year thereafter. Letter from Eileen Gauna et al., to Anne Goode, Director, Off. of C.R., U.S. Env't Prot. Agency (May 5, 1998); Luke Cole, *"Wrong on the Facts, Wrong on the Law": Civil Rights Advocates Excoriate EPA's Most Recent Title VI Misstep*, 29 ELR 10775, 10779 (Dec. 1999).
133. Draft Title VI Guidance for EPA Assistance Recipients Administering Environmental Permitting Programs (Draft Recipient Guidance) and Draft Revised Guidance for Investigating Title VI Administrative Complaints Challenging Permits (Draft Revised Investigation Guidance), 65 Fed. Reg. 39650, 39676–83 (June 27, 2000) [hereinafter Draft Title VI Guidance]. For

Table 1. Coastal Injustice Indicators[a]

Coastal/Marine Injustice	Examples	Sample Indicators to Track Reversal
Dispossession/Displacement	Privatization and appropriation of fisheries, marine, mangrove, and coastal resources; spatial displacement of local resource users within exclusive economic zones by aquaculture, oil and gas development, seawater desalination plants, and tourism	• Extent of use and property rights of local resource users, small-scale fishers, Indigenous Peoples • Reversal of spatial displacement by industry (e.g., oil and gas, aquaculture)
Pollution and Waste	Disproportionate impacts of oil development activities and spills, physical infrastructure such as pipelines and rigs, port development, aquaculture, nuclear energy, ocean dumping and accumulation of toxins and metals, acidification	• Age, extent, material composition of legacy infrastructure (e.g., pipelines, rigs) • Sediment toxicity and other indicators of cumulative impact of multiple forms of coastal and marine development • Waste disposal and number, extent, and type of spill per coastal or marine industrial activity • Lifecycle emissions of carbon, heavy metals according to coastal or marine industrial activity • Na-tech risk
Degradation	Coastal and marine ecosystem services such as food, water, wood, and other materials; regulating services such as flood protection and erosion control; support such as wildlife refuge and nurseries; nutrient cycling and production degraded by ocean and coastal development such as fishing, farming, and mining	• Ecosystem service extent • Ecosystem service quality • Access rights of local resource users to ecosystem services • Fish and wildlife habitat preservation
Livelihood Impacts	Exclusion of small-scale fishers from areas of renewable and non-renewable energy development; concentration of quota and vessel ownership and corporate capture of revenue	• Small-scale fisher access extent within a given distance from oil and gas, renewable energy infrastructure • Extent of concentration of quotas (e.g., ITQs), vessel ownership • Local fisher employment
Lost Access	Undermining formal access and harvesting rights; increased competition by extractive industries over resources and areas; non-physical barriers to access resources (e.g., institutional, regulatory, financial)	• Spatial extent of formal access and harvesting rights to marine and coastal resources by Indigenous and local communities
Inequitable Distribution of Benefits	Hiring and goods procurement for extractive coastal and marine industries fails to flow through coastal communities; elite capture of benefits by a small number of entities; unfavorable subsidies and concessions; lack of technical assistance	• Extent of hiring and procurement benefits captured by Black, Indigenous, and People of Color communities, women, small-scale fishers, low-income populations • Concentration of fishing licenses and quotas; concentration of ownership by coastal or marine industry
Cultural Impacts	Uses and values that can be monetized are privileged over fishing and subsistence harvesting livelihoods and values; coastal conservation leads to eco-gentrification; lost access to resources, residential displacement, and declining social cohesion	• Extent of integration of local knowledge, traditional customs, livelihoods, and rights into coastal and marine conservation activities
Marginalization of Women	Unrecognized, underpaid, or unpaid invisible roles played by women in coastal regions; discrimination in fisheries, aquaculture, oil and gas, blue carbon, and other industries	• Preservation of coastal resources and access rights of particular importance to women (e.g., inshore areas for shellfish harvesting, farmlands and fishing areas threatened by oil development)
Indigenous Rights Abuses	Special rights (e.g., subsistence, food security, navigation) linked to historical use, tenure, and cultural reliance on specific areas and resources threatened by economic development	• Spatial extent of Indigenous Peoples' subsistence and food security rights
Exclusion From Decisionmaking	Rhetoric of participation in mechanisms such as marine spatial planning not matched by exclusion from early stages, lack of representation, dismissal of local knowledge, inadequate specificity regarding social impacts	• Indicators of participatory planning and governance by coastal and marine region, resource

[a]Adapted from Bennett et al., *supra* note 19.

lem is limited resources. For example, EPA recently made clear that its "target number of compliance reviews in any year will depend in part on resources."[134] In Fiscal Year ("FY") 2021, EPA had the capacity to initiate one post-award civil rights compliance review in an environmentally overburdened community.[135] In FY 2021, EPA completed zero audits to ensure recipients comply with nondiscrimination program requirements.[136]

A third problem lies in the sources of data that an agency considers when processing an administrative complaint or conducting an affirmative compliance review. Sources include: (1) "relevant information on environmental, health risks or harms, and quality of life harms"; (2) EJScreen and "information from tools built by states or other entities"; (3) "data from scientific research literature, which could include data made available by community science environmental or health monitoring efforts and information from prior complaints"; (4) "news reports"; and (5) "statistical data."[137] Since publication of 2000's *Draft Revised Guidance for Investigating Title VI Administrative Complaints Challenging Permits*, EPA relied on a hierarchy of data sources that proceed from monitoring to modeled exposure to known releases to quantities of substances to activities with potential impacts.[138] Community-generated data do not feature prominently in this data hierarchy.[139] Nor have federal agencies made clear how community science can support claims or be used as agencies sift through data to identify and prioritize targets for investigation.

State civil rights laws such as California Government Code Section 11135 also prohibit discrimination—intentional and unjustified discriminatory impact—by state agencies, counties, and other local jurisdictions.[140] For decades, coastal justice activists called for the use of state civil rights laws to advance access to the shoreline and ecosystem services[141] and to remedy inequitable recovery and rebuilding in the wake of hurricanes and other disasters.[142] Agencies such as the California State Lands Commission agree that environmental justice and civil rights principles are consistent with the Public Trust Doctrine.[143] Other agencies, such as the State Water Resources Control Board, rely on federal funds for all or nearly all vital programs such as nonpoint source pollution, rendering them subject to Title VI and Section 11135.[144] Efforts to rebuild or adapt to climate change are further subject to the Fair Housing Act.[145] Yet, state, city, and county capacity to define, identify, measure, and track disparate impacts and other violations of civil rights laws in the coastal zone is limited.[146]

Therefore, federal and state coastal policy and conservation commitments should assist agencies that share jurisdiction over the coast in achieving compliance with civil rights laws. One way to do so is to facilitate overlay and proximity analysis of ongoing or potential impacts of development and government responses to coastal hazards with Black, Indigenous, and People of Color communities and their hazard-specific vulnerabilities. This will assist in environmental review under the National Environmental Policy Act ("NEPA")[147] and state analogues[148] for projects proposed in the coastal zone—particularly when environmental impact statements include an environmental justice analysis. This will also contribute to bottom-up, participatory marine spatial planning.[149] Development and government responses to coastal hazards with ongoing or potential disparate impacts according to race, color, or national origin include but are not limited to:

- Coastal toxicity, coastal toxic exposure, and coastal na-tech risk (e.g., spatial extent of sediment toxicity in estuaries and marine bays; concentration of National Priorities List properties within varying distances from coastal ecosystems and communities; concentration of Treatment, Storage, and Disposal facilities and large quantity generators within varying distances from coastal ecosystems and communities; Risk Management Plan facilities within varying distances from coastal ecosystems and communities; landfills, power plants, and incinerators within varying distances from coastal ecosystems and communities; Risk-Screening Environmental Indicators modeled toxic concentrations by stream segment; overlay of National Institutes of Health TOXMAP, EPA Cleanups in My Community map layers; fish tissue contamination indicator in EPA National Coastal Condition Reports; sub-lethal effects on marine organisms; NOAA Historical Oil and Chemical Spill Incidents Database and Emergency Response Division raw incidents data; overlay of community science map layers such as the Louisiana Bucket Brigade's Oil Spill Crisis Map; legacy infrastructure (e.g., oil and gas infrastructure weighted density); overlay of participatory GIS map layers such as FracTracker maps of coastal infrastructure).

example, EPA indicates a preference for risk greater than 1/10,000 or hazard indices far above one for "adverse"; simpler approaches based on proximity "where more detailed . . . can't be developed" for "disparate"; and two or three standard deviations with "multiple measures" of disparity for "significant."

134. ECRCO Process, *supra* note 131, at 2.
135. U.S. Env't Prot. Agency, Draft FY 2022-2026 EPA Strategic Plan 29 (2022), https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf [https://perma.cc/R8PY-UCXD].
136. *Id.*
137. ECRCO Process, *supra* note 131, at 2.
138. Draft Title VI Guidance, 65 Fed. Reg. 39650, 39660 (June 27, 2000).
139. *Id.* at 39679.
140. Danfeng Soto-Vigil Koon, *Cal. Gov't Code § 11135: A Challenge to Contemporary State-Funded Discrimination*, 7 Stan. J.C.R. & C.L. 239, 241–42 (2011).
141. García & Baltodano, *supra* note 20, at 146.
142. Nat'l Comm'n on Env't Just. on the Gulf Coast & Lawyers' Comm. for C.R. Under L., Protecting Vulnerable Coastal Communities VII (2008), https://lawyerscommittee.org/wp-content/uploads/2008/04/Protecting-Vulnerable-Coastal-Communities.pdf [https://perma.cc/RLT2-JXRA].
143. Cal. State Lands Comm'n, Environmental Justice Policy (2002), https://www.slc.ca.gov/wp-content/uploads/2018/11/EJPolicy.pdf [https://perma.cc/WZ4D-N5MU].
144. Gita Kapahi, *Environmental Justice and the Water Boards: Our Toolbox and Current Actions*, State Water Bd. (Oct. 25, 2013) (on file with authors).
145. Fair Housing Act of 1968, 42 U.S.C. §§ 3601–3619.
146. Interview with Cal. State Reg. Offs. (July 29, 2022) (on file with authors).
147. *See generally* National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4347.
148. *See* Cal. Pub. Res. Code § 21080(b)(14) (West 2014).
149. *See* Bennett et al., *Blue Growth and Blue Justice, supra* note 121, at 6.

- Community impacts of government responses to sea-level rise and other coastal hazards (e.g., spatial extent of state Coastal Zone Management Programs that target coastal erosion; impairment or loss of protective features in state-administered Coastal Natural Resource Areas; distribution of beach and dune restoration and nourishment, typically in high-property value areas; shoreline stabilization; estuarine wetland restoration; coastal uplands conservation; delta restoration; reef creation and restoration; island creation and restoration; downdrift erosion patterns, wetland loss, and other effects of defensive armoring; publicly funded stream restoration by National River Restoration Science Synthesis classification).
- Access changes to coastal and public trust lands and related ecosystem services; population demographics within varying distances from public shoreline access points; distribution of public facilities such as parking areas within varying distances from public shoreline access points to mitigate against overcrowding; predominant approach to beachfront access by state (e.g., reasonable access, unfettered access, exclusion); species loss; endangered species recovery plans; endangered species critical habitat; biomass loss; invasive species; fish catch decline; threats to Indigenous restrictions put in place to ensure ecosystem integrity; Marine Protected Areas that limit marine and coastal biota access (e.g., fish, shellfish, marine mammals); food insecurity; food sovereignty; marine-based livelihoods (e.g., subsistence and artisan fishers, processers); ocean acidification; ocean surface temperature; land returns and extent of tribal management.
- Community impacts of flood hazard and storm event planning and response decisions (e.g., National Flood Insurance Program affordability; state-imposed moratoria on using sea-level rise or subsidence in flood planning; state coastal commission limits on resilience building; distribution of ecosystem-focused strategies such as intact wetlands and mangroves; saltwater intrusion into freshwater marshes; effects of private landowner installation of bulkheads on inland marsh migration; repetitive loss due to multiple flood events by community; projected loss of ecosystem services; spatial distribution of voluntary buyouts, forced relocation, and retreat; low-lying island and coastal population extent, density, and demographics).
- Community impacts of heat event and wildfire planning and response decisions (e.g., Fire Hazard Severity Zones; ArcGIS Zonal Statistics tool to calculate mean grid cell wildfire probability (recent use of this technique in California revealed wildfire risk is greatest in the foothills and along the coast); excess particulate matter concentrations attributable to wildfires; social vulnerability to wildfire smoke (e.g., respiratory disease, cardiovascular disease, age, pregnancy); local high-heat thresholds and social vulnerability to extreme heat (e.g., heat island effect, population density, lack of open space, lack of access to air conditioning, inability to pay high electricity bills, no electricity, population density on higher floors of multistory buildings, obesity, diabetes, cardiovascular disease, age, language access); U.S. Department of the Interior wildfire responses on national park, preserve, wildlife refuge, and Indigenous lands; U.S. Forest Service wildfire responses in National Forest System; FEMA Fire Management Assistance Grants to reimburse fire suppression costs; fire-adapted communities; wildfire adaptation pathways).

We acknowledge the lack of consideration of justice in conservation, sustainability, and ecosystem services research and policy. In addition, state and federal environmental justice policy tends to focus on, and abruptly stop at, procedural fixes.[150] Federal and state coastal policy and conservation commitments must advance broader dimensions of justice as included in the environmental justice movement's founding documents.[151] Recognitional, distributive, structural, compensatory, and social justice should inform design, contributions to, and updates to such policy. Finally, to advance the Administration's Justice40 initiative, federal and state agencies should track benefits of newly conserved marine and coastal areas, as well as the spatial extent of benefits within disadvantaged communities, which we refer to as "30for40."[152]

D. Advance Creative and Expansive Use of Coastal Legal Authorities

The surest way to counter environmental injustice through conservation is for agencies that share jurisdiction over the coast to use *existing* legal authorities to protect disadvantaged communities—and the lands and waters upon which they rely—from harm. In 2000, EPA determined that it had such authority across a broad range of programs.[153] In 2011, it updated the memo with over 100 pages of statutory examples.[154] EPA released a second update in May 2022.[155] The documents fail to stress the importance of coastal or marine justice. Nor do agencies employ many of the legal tools identified in these inventories.[156] Absent are the living documents, visualization tools, and clear incentives for

150. *See* Lee, *supra* note 94, at 10209.
151. *See, e.g.*, Letter from Richard Moore & Jeanne Gauna, Co-Dirs., SouthWest Organizing Project, to Jay Hair, President, Nat'l Wildlife Fed'n (Mar. 16, 1990) (on file with authors).
152. *See* Letter from Marcela Gutiérrez-Graudiņš, Exec. Dir., Azul, to Shantha Ready Alonso, Dir. of Intergovernmental & External Affs., Dep't of Interior 5 (Sept. 13, 2021).
153. Memorandum from Gary S. Guzy, Gen. Couns., to certain EPA Assistant Adm'rs 1 (Dec. 1, 2000).
154. *See* U.S. Env't Prot. Agency, Plan EJ 2014: Legal Tools 1 (2011), https://www.epa.gov/sites/default/files/2015-02/documents/ej-legal-tools.pdf [https://perma.cc/FYR6-YEFZ].
155. *See* U.S. Env't Prot. Agency, EPA Legal Tools to Advance Environmental Justice 2 (2022), https://www.epa.gov/system/files/documents/2022-05/EJ%20Legal%20Tools%20May%202022%20FINAL.pdf [https://perma.cc/M3CT-R9UB].
156. *Id.*; *see* Memorandum from Gary S. Guzy, *supra* note 153; Plan EJ 2014: Legal Tools, *supra* note 154.

staff to consider, advance, and track their use of coastal justice legal authorities. Each legal tool's applicability can be represented as a point or polygon. Existing screening tools could be used to distinguish locations and areas in which each tool informs, or potentially could inform, an agency program, policy, or decision. Attention to coastal justice legal tools can also help communities identify coastal zone management laws that exacerbate environmental injustice. (See Table 2 on following pages.)

Conservation commitments should also articulate, locate, and track property innovations that facilitate coastal conservation, mitigation, and adaptation. Examples include the spatial extent of public trust doctrine lands and their protected uses according to state law, flexible land use controls (e.g., conditional uses, buffer zones in transitional areas, building codes to limit severity of na-tech impact), dynamic and anticipatory zoning, conservation and public easements and permissible uses within easement rights-of-way, marine protected areas that prioritize non-extractive, non-polluting, and culturally significant uses for disadvantaged communities, and predominant state interpretations of takings law and public accommodations.

E. Rearticulate What It Means to "Integrate" Justice Principles Into Policy

Drawing on a quarter-century of analysis, legal scholars,[157] social scientists,[158] and observers show that state and federal agencies have yet to integrate the Principles of Environmental Justice into core regulatory programs in a manner that reduces hazards. This is true for California coastal policy, even though the principles are embodied in state law,[159] Coastal Commission[160] and State Lands[161] environmental justice policies, and an expansive definition of environmental justice under the Coastal Act.[162] We are not in a position to critique the Principles, which are grounded in human rights, outcome-oriented,[163] informed by multiple dimensions of justice (e.g., distributive, procedural, recognitional), influence movements for climate, energy, and data justice as well as just transition,[164] and guide activism and progress.[165] Nor can Azul or the expansive networks through which we operate begin to revise them. These Principles serve as our constitution.

Rather, to successfully meld conservation commitments with environmental and racial justice, we must refine what is meant by policy integration. First, we note that from the moment the Principles were adopted, there were attempts to simplify, synthesize, and translate them.[166] Demands that communities be "free from ecological destruction"[167] became requests, often lacking the force of law, that the state ensure "fair treatment" and/or "meaningful involvement."[168] These narrative definitions are self-limiting in that they present one or more mutually reinforcing principles in isolation. They also lend themselves to box checking, where working groups inform conversion of goals in strategic plans into largely procedural action items in implementation plans and program updates.

In California, agencies rely upon a confusing array of sources—a goal in a strategic plan, items in an action plan, an unpublished memorandum—for what constitutes "EJ policy" and an equally diverse range of thresholds to declare that programs "incorporate" environmental justice principles. For example, Water Board inventories describe some programs as "not having a strong nexus to EJ principles," such as stormwater.[169] Others, such as site cleanup and brownfields, are described as having already "incorporated" environmental justice principles—even in 2004.[170] Ten years later, staff presentations note broad swaths of regulatory practice, such as the National Pollutant Discharge Elimination System, Total Maximum Daily Loads, water quality standards, underground stor-

157. *See, e.g.*, Tonya Lewis & Jessica Owley, *Symbolic Politics for Disempowered Communities: State Environmental Justice Policies*, 29 B.Y.U. J. Pub. L. 183, 191–92 (2014); Caroline Farrell, *SB 115: California's Response to Environmental Justice—Process Over Substance*, 1 Golden Gate U. Env't L.J. 113, 124–25 (2007).

158. *See, e.g.*, Laura Pulido et al., *State Regulation and Environmental Justice: The Need for Strategy Reassessment*, 27 Capitalism Nature Socialism 12, 15 (2016); Jill Lindsey Harrison, *Bureaucrats' Tacit Understandings and Social Movement Policy Implementation: Unpacking the Deviation of Agency Environmental Justice Programs From EJ Movement Priorities*, 63 Soc. Probs. 534, 538 (2016).

159. *See* Cal. Pub. Res. Code § 30330.

160. *See* Cal. Coastal Comm'n, Environmental Justice Policy 2–3 (2019), https://documents.coastal.ca.gov/assets/env-justice/CCC_EJ_Policy_FINAL.pdf [https://perma.cc/22A9-BGW3].

161. Cal. State Lands Comm'n, Environmental Justice Policy 2–6 (2018), https://www.slc.ca.gov/wp-content/uploads/2018/11/EJPolicy.pdf [https://perma.cc/BE6X-AZR6].

162. Cal. Pub. Res. Code § 30107.3(b).

163. Principles of Environmental Justice, *supra* note 45.

164. *See* Caroline Farrell, *Just Transition: Lessons Learned From the Environmental Justice Movement*, 4 Duke F. L. & Soc. Change 45, 49 (2021); Clifford J. Villa, *Remaking Environmental Justice*, 66 Loy. L. Rev. 469, 476 (2020); Joshua Gellers & Trevor Cheatham, *Sustainable Development Goals and Environmental Justice: Realization Through Disaggregation?*, 36 Wis. Int'l L.J. 276 n.5 (2019); *see generally* Glenn Johnson & Robert Bullard, *Environmental Justice and Public Policy: Grassroots Activism and Its Impact on Public Policy Decision Making*, 56 J. Soc. Issues 555 (2000).

165. *See, e.g.*, Cal. Env't Just. All., Environmental Justice Agency Assessment 2020: Executive Summary (July 2021), https://caleja.org/wp-content/uploads/2021/07/CEJA-Agency-Assessment-Exec-Summ-062021-FINAL-WEB-1.pdf [https://perma.cc/X5SS-4SKM].

166. *See, e.g.*, Robert D. Bullard, *Environmental Justice for All: It's the Right Thing to Do*, 9 U. Oregon J. Env't L. & Litig. 281, 307 (1994) (collapsing 17 Principles of Environmental Justice into five).

167. Principles of Environmental Justice, *supra* note 45.

168. Perhaps the first EPA definition of environmental justice reads: "the fair treatment of people of all cultures, incomes, and educational levels with respect to protection from environmental hazards." Availability of Report to Congress on Cement Kiln Dust; Request for Comments and Announcement of Public Hearing, 59 Fed. Reg. 709, 713 (Jan. 6, 1994) (to be codified at 40 C.F.R. pt. 261). EPA added "meaningful involvement" to its definition the following year. EPA Office of Environmental Justice Small Grants Program, Solicitation Notice for Fiscal Year 1996, 60 Fed. Reg. 62432, 62433 (Dec. 6, 1995). It dropped the term from its definition for a brief period (1997-2000), after which the twin concepts served as the foundation for its standard definition. Clifford Villa, *Remaking Environmental Justice*, 66 Loyola L. Rev. 469, 495 (2020). By comparison, California did not link "fair treatment" and "meaningful involvement" in its statutory definition of environmental justice for 20 years. Cal. Gov. Code § 65040.12(e).

169. Interview with Cal. State Water Res. Control Bd. Off. (Dec. 20, 2021) (on file with authors).

170. *Id.*

Table 2. Coastal Justice Legal Tools and Metrics to Track Progress

Legal Authority	Sample Coastal Justice Legal Tools and Metrics to Track Progress
Coastal Zone Management Act; State Coastal Law	• Residential, commercial, and industrial development sites located contiguous with or near existing developed areas by year in response to state coastal law development limits, overlayed with federal- and state-identified disadvantaged communities (e.g., Cal. Pub. Res. Code § 30250). • Densification of port districts in accordance with state coastal laws (e.g., Cal. Pub. Res. Code § 30701). • Spatial extent of state coastal law limits on new tanker terminals, oil and gas development, new or expanded refineries and petrochemical facilities, and new or expanded electric generating plants (e.g., Cal. Pub. Res. Code §§ 30261-30264). • Spatial extent of state limits on new hazardous industrial development near existing developed areas (e.g., Cal. Pub. Res. Code § 30250). • Spatial extent of Local Coastal Programs that include consideration of disadvantaged communities (e.g., Cal. Pub. Res. Code § 30500). • Spatial extent of state-approved Local Coastal Program allowable land uses along the coast (e.g., Cal. Pub. Res. Code § 30500); spatial extent of state-approved Local Coastal Program-identified coastal hazard rate, magnitude, and likelihood. • Use of federal consistency requirements to ensure state protections for disadvantaged communities are extended into federal waters when there are reasonably foreseeable coastal effects from federal waters on state waters as defined under the Submerged Lands Act. • Spatial extent of state coastal act limitations on dredging, filling, alterations of rivers and streams, and construction altering natural shoreline processes (e.g., Cal. Pub. Res. Code §§ 30233, 30235, 30236). • Spatial extent of state coastal act protections against, and containment and cleanup facilities for, crude oil, gas, petroleum product, and hazardous substance spills (e.g., Cal. Pub. Res. Code § 30232). • Overlay state coastal act definitions of "coastal zone" (e.g., "land and water areas extending seaward to the state's outer limit of jurisdiction and extending inland generally 1000 yards from the mean high tide line of the sea" or "to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea . . . ," Cal. Pub. Res. Code § 30103), with spatial extent of federal- and state-identified disadvantaged communities. • Overlay state coastal act/coastal commission/US Fish and Wildlife Service definitions of "wetland," including the upland boundary of wetlands (e.g., 14 Cal. Code of Regs. § 13577(b)(1)(A)-(C)), with spatial extent of federal- and state-identified disadvantaged communities. • Spatial extent of state coastal act-required actions to maintain or restore biological productivity and quality of coastal waters, streams, wetlands, estuaries, and lakes (e.g., runoff control, natural vegetation buffer areas, minimized alteration of natural streams, wastewater discharge and entrainment minimization, runoff control, Cal. Pub. Res. Code § 30231). • Spatial extent of sensitive resource values and environmentally sensitive habitat areas identified under state coastal acts (e.g., Cal. Pub. Res. Code § 30525); spatial extent of protections against conversion of lands under state coastal acts (e.g., Cal. Pub. Res. Code § 30242). • Spatial extent of mitigation measures provided to minimize effects of port facilities, coastal dependent industrial facilities, and restoration projects in wetlands (Cal. Pub. Res. Code §§ 30233(a), (c)). • Spatial extent of mean public access to shoreline from nearest public roadway by census block overlayed with spatial extent of federal- and state-identified disadvantaged communities (e.g., Cal. Pub. Res. Code § 30212). • Distributive coastal justice requirements according to state coastal acts (e.g., Cal. Pub. Res. Code § 30107.3, "effects of pollution are not disproportionately borne by any particular populations or communities").
State Constitutions	• Access to navigable waters (e.g., population demographics within varying distance of public shoreline access points; distribution of public facilities such as parking areas within varying distance of public shoreline access points to mitigate against overcrowding); spatial extent of Public Trust shoreline and linked resources inland (e.g., CAL. CONST. art. X, § 4).
Endangered Species Act	• Spatial extent of critical habitat designations by FWS and NMFS for which environmental justice was considered as either an economic impact or "other relevant impact" (16 U.S.C. § 1533(b)(2)).
National Environmental Policy Act	• Spatial extent of federal trust responsibility for protection of subsistence, Federal Responsibility for Trust Assets, Allotments, and Native Townsites. • Projects for which direct and indirect effects and/or cumulative impacts on minority, low-income, and Indigenous coastal communities were considered; spatial extent of "environmental justice" communities as defined in Environmental Assessment and Environmental Impact Statement documents (Council on Environmental Quality, Environmental Justice: Guidance Under the National Envtl. Policy Act (Dec. 10, 1997)). • Projects for which mitigation measures were developed specifically to address potentially disparate impacts to minority, low-income, and Indigenous coastal communities (U.S. EPA, Guidance for Consideration of Environmental Justice in Clean Air Act Section 309 Reviews (July 1999)).

National Marine Protection, Research, and Sanctuaries Act	• Spatial extent of ocean dumping permits that consider effects on overburdened communities. • Amendments to establish national system of networked, fully protected marine reserves (at present, sanctuaries cover 0.4% of the Exclusive Economic Zone). • Amendments to provisions that require deference to Regional Fishery Management Councils in regulations for fishing within the Exclusive Economic Zone. • Amendments to prohibit aquaculture, seabed mining, and motorized recreation within expanded marine sanctuaries; expand prohibitions on oil and gas development and legacy infrastructure. • Amendments to revisit multiple use provisions and consultation requirements; focus on preservation. • Identify, monitor, and protect underwater cultural heritage. • Protect coastal areas from overfishing and bottom trawling. • Protect spawning, nursery grounds, and migratory pathways of species relied upon by coastal communities, subsistence fishers; spatial extent of protections.
Clean Water Act	• Water quality criteria guidance to protect recreational and subsistence fishers, Tribes, and coastal communities that consume higher than average levels of fish and shellfish. • Updated water quality criteria for coastal and Great Lakes waters (CWA § 304(a)(9)). • Waters where it is known that highly exposed populations recreate designated for primary contact recreation (CWA § 303(c)(4)(B)). • Impacts on overburdened communities considered when assigning Total Maximum Daily Load waste load allocations for impaired waters (CWA § 303(d)). • Coastal justice considered in National Pollutant Discharge Elimination System permitting, storm water programs using discretionary authority (CWA §§ 402(a), (d)). • Long Term Control Plans for Combined Sewer Overflows give priority to controlling overflows in sensitive areas such as national marine sanctuaries, waters with threatened or endangered species or habitat, waters with primary contact recreation, public drinking water intakes or designated protection areas, and shellfish beds (CWA § 402(q); 59 Fed. Reg. 18688). • Discharges of storm water from impervious surfaces or developed property limited (CWA § 402(p)). • Animal feeding operations designated as concentrated animal feeding operations that require NPDES permits (40 C.F.R. § 122.23(c)). • Coastal justice considered in public interest review of permits that authorize discharge of dredged or fill material into waters of the United States (including cultural, subsistence, way of life, historic values, and cumulative impacts) (CWA § 404(b)(1)). • Coastal justice factors relating to aquatic ecosystem degradation considered when exercising veto authority over state-issued permits (CWA § 404(j)). • Treatment-as-state provisions for Tribes implemented (e.g., for water quality standards) (CWA § 518). • Demonstration projects for elimination of pollution in native Alaska villages (CWA § 113). • Coastal justice concerns considered when promulgating effluent standards and prohibitions for toxic pollutants (CWA § 307(a)). • Sewage sludge standards considered for whether they are sufficient to address overburdened communities.
Resource Conservation and Recovery Act	• Treatment, Storage, and Disposal facilities for which omnibus authority is used to consider cumulative risks, unique exposure pathways such as subsistence fishing, and sensitive populations when issuing permits for hazardous waste (RCRA § 3005(c)(3)). • RCRA-permitted facilities for which contingency plans account for cumulative impacts of multiple facilities, vulnerabilities to coastal hazards, and limited resources to prepare for emergency situations among coastal communities (RCRA § 3004(a)). • Coastal zone RCRA-permitted facilities with orders to conduct reasonable monitoring, testing, analysis, and reporting (RCRA § 3013(a)) or health assessments for land disposal (RCRA § 3019). • Treatment, Storage, and Disposal facilities with location-specific standards (e.g., buffer zones) (RCRA § 3004(o)(7)). • RCRA-permitted facilities with solid waste management plans that consider coastal justice factors, demographic factors, population density and distribution (RCRA § 4002(c)).
Comprehensive Environmental Response, Compensation, and Liability Act	• National Priorities List sites for which coastal justice factors were considered to determine priority for site cleanup (e.g., Hazard Ranking System factors such as "overall protectiveness of human health and the environment") (40 C.F.R. § 300.430(e)(9)(iii)).
Outer Continental Shelf Lands Act	• Spatial extent of potential for adverse impact on the coastal zone as required in environmental reviews for offshore and coastal plain oil and gas leasing and drilling programs (e.g., 43 U.S.C. § 1344(a)(3)); proximity of offshore oil and gas development emissions sources to offshore fishing and hunting (Shell Gulf of Mex., Inc., 15 E.A.D. 103 (EAB 2010)).

Clean Air Act	• Stationary sources for which impacts to coastal communities and ecosystem services were considered in the design of New Source Performance Standards (CAA §§ 111(b), 111(f)(2)(B)). • Solid waste incinerators for which coastal impacts were minimized on a site-specific basis (CAA § 129(a)(3)). • Stationary sources for which coastal, non-air quality health and environmental impacts were used when setting MACT standards or determining residual risk (CAA §§ 112(d)(2), 112(f)). • State Implementation Plans that include consideration of non-air quality and other air quality-related health and environmental impacts in coastal regions (CAA § 179(d)). • Air Quality Control Regions where coastal justice considerations included in PSD, NSR permitting criteria. • Stationary sources with additional monitoring related to location-specific accidental release prevention concerns in the coastal zone (CAA § 112(r)). • Additional methods to prevent, measure, and control emissions and evaluate health and ecological risks in the coastal zone (CAA § 112(l)). • Monitored deposition of hazardous air pollutants onto coastal waters, the Great Lakes, the Chesapeake Bay, and Lake Champlain (CAA § 112(m)).
Other Actions	• Revisit prior administration calls for a marine wilderness preservation system. • Restore Regional Planning Bodies and collaborative coastal and marine spatial planning established under Exec. Order 13547 (rescinded). • Clarify how ocean zoning can contribute to climate adaptation. • Restore data portals established as part of regional plans (e.g., Northeast, Mid-Atlantic) and related data sets (e.g., marine life distributions, fishing grounds, recreational areas, shipping lanes, proposed renewable energy sites). • Undertake rigorous survey of US ocean waters similar to wilderness inventories that are mandated by the Wilderness Act (at present, there is only one sanctuary along the Gulf Coast; there are none along the Alaska coast). • Conduct comprehensive inventory of endangered marine species and critical habitats along the coast and within sanctuaries, as well as sanctuary extent necessary to conserve each species. • Publish finding that addition of new sanctuaries will not have a negative impact on the system. • Provide sufficient resources for Commerce Department to inventory known sanctuary resources and complete site characterization studies for all sanctuaries within 10 years. • Require data collection from NMFS and regional fishery management councils on ecosystem, species, and habitat extent and health within sanctuaries.

age tanks, groundwater monitoring, land disposal, and water basin planning, to name a few, that "could consider EJ principles."[171] However, declaring programs have a "strong" or "not strong" nexus to environmental justice principles does not facilitate program evaluation. Nor does it aid in our constant reassessment of whether, or to what extent, the environmental justice movement should continue our reliance upon the state.

Our work has shown that there are natural limits to whether principles of justice can be integrated into coastal policy. First, for every rights-based or maximalist principle we espouse, there are doctrines that, despite decades of evolution and even progressive interpretation, remain comparatively narrow in application. Examples include "public trust resource," "mitigation," and "public interest" balancing.[172] Second, there is considerable variance in coastal community formation and racialization, whereas screening tools such as CalEnviroScreen, from which vast stores of funding and agency attention are allocated, privilege statewide data availability and definitions of "disadvantaged community."[173] Third, the intercategorical effects of coastal community racialization and policy artifacts described above render "EJ analysis," which appears in occasional coastal or marine permitting documents, arbitrary.[174] There must be renewed focus on regional as opposed to statewide analysis.

Fourth, coastal communities and the ecosystems and infrastructure upon which they rely face qualitatively distinct forms of vulnerability, such as the growing number and intensity of compound environmental hazards that disaster planning treats in succession or isolation.[175] Fifth, the unique spatial and temporal dynamics of coastal zones suggest that informed consent, one of the movement's founding principles, can no longer be viewed as a discrete act at a given stage of a planning or permitting process.[176] Sixth, whole of government

171. Kapahi, *supra* note 144.

172. For example, in California, the State Lands Commission and Coastal Commission share jurisdiction over public trust lands and uses, hold discretionary authority to assess "meaningful alternatives beyond mitigation measures," consider public access to include access to clean water and affordable housing, and must balance preservation and development with "social and economic needs of the people of the state." *See* Cal. Coastal Comm'n, Environmental Justice Policy, *supra* note 160, at 10; Cal. State Lands Comm'n, Environmental Justice Policy, *supra* note 161, at 9. These and other expansive interpretations of legal doctrine rarely find their way into decision documents.

173. *CalEnviroScreen 4.0*, Cal. Off. of Env't Health Hazard Assessment (Oct. 20, 2021), https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40 [https://perma.cc/S87X-RFRQ].

174. *See, e.g.*, Cal. Coastal Comm'n, Environmental Justice Policy, *supra* note 160, at 10 ("shall consider, when applicable, how proposed development will positively or negatively affect marginalized communities . . . The Commission will make use of CalEnviroScreen, U.S. EPA EJScreen, U.S. Census data and/or similar tools . . .").

175. *See* Gianluca Pescaroli & David Alexander, *Understanding Compound, Interconnected, Interacting, and Cascading Risks: A Holistic Framework*, 38 Risk Analysis 2245 (2018).

176. Gwen Ottinger, *Changing Knowledge, Local Knowledge, and Knowledge Gaps: STS Insights Into Procedural Justice*, 38 Sci., Tech. & Human Values 250, 253 (2012).

response—which we acknowledge remained unrealized for half a century—cannot be viewed as an end; it must be attuned to and ensure continuous refinement in response to the inter- and intra-agency gaps and scalar blind spots that emerge as coastal communities face system effects.

Finally, government response must advance a comprehensive vision of *ownership* as distinct from distributive, procedural, and recognitional justice, borrowing from, inter alia, collective ownership and systems control advanced in energy justice, access to and oversight of data infrastructures from data justice, and rights to self-determination and status as equal partners from environmental justice. Models of community ownership abound, from IVAN networks and task forces[177] to calls for the use of participatory budgeting[178] in the Community Air Protection Program under AB 617.[179] To this day, agency staff struggle with the absence of clear vehicles, such as contracting and contractor clauses and requirements, by which to ensure community ownership over policy design and implementation.[180] Narrative goals such as achieving "meaningful involvement"[181] ring hollow in the meantime.

IV. Conclusion

Dual commitments to conservation and environmental justice can facilitate fundamental shifts in state and federal policy. But as we strive to achieve America the Beautiful, our own 30for40 goal, and healthy coastal lands, waters, and communities, we must adjust the threshold of responsible governance by which we continue to rely upon the state in matters of life and death. This Article is our first attempt to render such an adjustment. Responsible governance must avoid community erasure, account for variance in community formation and racialization, and ensure community ownership over process and systems. It must reverse historical injustices that are magnified by ongoing policies and practices, bring appropriate staff and analytical capacity to bear to affirmatively enforce antidiscrimination laws, and advance creative and expansive use of existing authorities. Finally, it must rearticulate what it means to integrate justice principles within state and federal policy.

We continue to work with agency partners to lead coastal management and spatial planning from inequitable costs to equitable benefit-sharing and accessibility, from beach nourishment to ecosystem-focused strategies, from coastal defense to adaptation, from buyouts and relocation to resilience, and from private property to preservation of lands and waters held in trust for the benefit of future generations. But as our colleagues make clear in a recent blueprint for community air protection reform, "the state of justice, environmental and otherwise, has evolved and changed in very significant ways" over the past few years, and "policies seen as forward leaning in 2017 must be reconsidered."[182]

177. *See* Gustavo Aguirre, *Introduction to Community Air Monitoring South Kern*, Cent. Cal. Env't Just. Network (Oct. 2021), https://community.valleyair.org/media/3121/community-air-monitoring-in-the-south-kern-ab-617_eng.pdf [https://perma.cc/2RSD-XXFD].

178. Thad Calabrese et al., *Does Participatory Budgeting Alter Public Spending? Evidence From New York City*, 52 Admin. & Soc'y 1382, 1383 (2020); Cathy Albisa & Anja Rudiger, *Participatory Budgeting at the Local, State, & Federal Level*, Movement 4 Black Lives (2020), https://m4bl.org/wp-content/uploads/2020/05/ParticipatoryBudgeting-OnePager.pdf [https://perma.cc/J7UZ-SHLC].

179. Jonathan K. London et al., The Past, Present, and Future of AB 617: Envisioning a Way Forward Together, 23–30 (2022), https://ww2.arb.ca.gov/sites/default/files/2022-02/Convening-ENGLISH_1.pdf [https://perma.cc/BR46-9ZQM].

180. Interview with Cal. State Reg. Offs. (July 29, 2022) (on file with authors).

181. *Environmental Justice*, U.S. Env't Prot. Agency, https://www.epa.gov/environmentaljustice/learn-about-environmental-justice [https://perma.cc/8TX7-E842] (Sept. 6, 2022).

182. Writer's Grp., California Community Air Protection: Assembly Bill 617 People's Blueprint 6 (Sept. 2021), https://ww2.arb.ca.gov/sites/default/files/2021-09/PBP%20Writers%20Group%20Draft%20for%20CARB%202021.09.08_acc.pdf [https://perma.cc/W8A3-DSJY].

THE SEARCH FOR CLIMATE AND ENERGY JUSTICE IN THE GLOBAL SOUTH: SHIFTING FROM GLOBAL ASPIRATIONS TO LOCAL REALIZATION

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ABSTRACT

How does the law regulate justice and human rights risks in energy investments, climate action, policies, and projects? With the adoption of the U.N. Sustainable Development Goals, the last years have seen a significant rise in policies and projects aimed at addressing the problem of climate change, promoting energy efficiency, and advancing energy access to the over one billion people that do not have access to reliable energy. Despite the importance of these efforts, large climate and energy projects have also been linked with land grabs, forced displacements, gender injustice, and other complex human rights violations across the world, especially in the Global South, where a significant proportion of the world's energy-poorest people live. Understanding justice and human rights risks in climate action and energy access projects, and the legal frameworks and tools to address them, is essential for effective risk management especially as states and business enterprises design and implement both net-zero and sustainability initiatives. This Article offers critical perspectives on the search for climate and energy justice in the Global South. It discusses law and governance innovations for designing and implementing just, inclusive, and right-based climate and energy policies that balance net-zero and human rights objectives.

I. Introduction

With the adoption of the United Nations Sustainable Development Goals ("SDGs") in 2015, there has been a significant rise in policies and projects aimed at achieving two mutually reinforcing objectives.[1] The first is to address the energy poverty crisis—which is defined as the inability of households to access electricity and modern energy services at an affordable cost—that is currently facing many parts of the world, especially in the Global South.[2] Consequently, investments in infrastructure projects aimed at expanding energy access ("energy access projects") are increasing across the world, consistent with the United Nations SDG 7 on clean, stable, and affordable energy for all by the year 2030.[3]

The second objective is to address the climate change emergency that is already threatening human existence in many parts of the world, especially in already vulnerable Global South countries.[4] Climate change raises complex existential threats to several Global South countries in Africa, Latin America, and Asia. Several countries in these regions have dual vulnerabilities to climate change, both as arid countries and developing states.[5] In response, more than 2,000 jurisdictions and governments worldwide have declared a climate emergency, resulting in increased legislation and regulatory action to reduce emissions of greenhouse gases ("GHGs") that contribute to climate change by the year 2050, consistent with the Paris Agreement and SDG 13.[6] The net-zero emission drive has resulted in increased

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1. G.A. Res. 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development (Sept. 25, 2015), https://sdgs.un.org/2030agenda [https://perma.cc/BV82-4VM2].
2. Damilola S. Olawuyi, *Energy Poverty in the Middle East and North African (MENA) Region: Divergent Tales and Future Prospects*, *in* Energy Law and Energy Justice 254–72 (Inigo Del Guavo et al. eds., 2020).
3. *Id.*
4. Dalal Assouli et al., Climate Change Law and Policy in the Middle East and North Africa Region 1–10 (Damilola S. Olawuyi ed., 2022).
5. *Id.* at 4.
6. *See Climate Emergency Declarations in 2,318 Jurisdictions and Local Governments Cover 1 Billion Citizens*, Climate Emergency Declaration (Feb. 5,

investment in decarbonization and clean energy projects, especially solar, wind, hydropower, and battery technologies, and infrastructure.[7] A number of projects have also been implemented to advance the reduction in the emission of GHGs that cause climate change. These include clean development mechanisms ("CDM") and Reducing Emissions From Deforestation and Forest Degradation, sustainable management of forests and conservation, and enhancement of forest carbon stocks ("REDD+").[8]

However, despite the significance of these efforts to the net-zero movement, climate and energy access projects have also been linked with land grabs, forced displacements, modern slavery, gender injustice, environmental pollution, and other complex human rights violations across the world, especially in Indigenous communities.[9] For example, a recent report of the Australian Clean Energy Council documents the growing evidence that clean energy projects are linked to human rights violations, modern slavery, and forced labor.[10] Recent reports also show how children as young as seven years old are being forced to work in dangerous artisanal cobalt mines in the Democratic Republic of Congo ("DRC").[11] The DRC accounts for 60% of the global supply of cobalt, an essential transition mineral needed to power batteries for electric vehicles, solar, wind, and other renewable energy infrastructure.[12] Yet, the DRC remains one of the five poorest nations in the world, with more than 80% of its citizens still lacking access to reliable modern energy services.[13] As clean energy policies and projects ramp up in scale, global demand for transition minerals are projected to significantly increase, which may further exacerbate human rights violations especially in Global South countries. Several of these countries, like the DRC, currently have weak legal and institutional quality on human rights.[14] If the world is to avoid incoherent and unjust transitions, that is energy transition efforts that exacerbate inequity, energy poverty, social exclusions and human rights violations in communicates and societies, then dedicated climate and energy justice programs are required to place human rights at the heart of net-zero and sustainability initiatives.[15] Ensuring just and rights-based transition to clean energy is especially more important in the Global South where several of the world's energy-poorest and climate change-impacted people live.[16]

For several decades, international law instruments—ranging from the Universal Declaration of Human Rights ("UDHR") of 1948, the Paris Agreement, to the United Nations Guiding Principles on Business and Human Rights ("UNGPs")—have all emphasized the need to respect, protect, and fulfill human rights in the design and implementation of human development projects.[17] Yet, as this Article illustrates, climate action and energy access projects and policies in several Global South countries still largely fail to properly recognize and integrate human rights. Understanding justice and human rights risks in climate action and energy access projects, and the legal frameworks and tools to address them, is essential for effective risk management, especially as states and business enterprises design and implement net-zero and sustainability initiatives.

This Article offers critical perspectives on the search for climate and energy justice in the Global South. It discusses law and governance innovations for regulating justice and human rights risks in energy investments, climate action, policies, and projects in a manner that leaves no one behind. The Article proceeds in five parts. After this introduction, Part II examines the drivers and manifestations of injustice and inequity in the development and implementation of climate and energy projects and policies. Part III examines coherence gaps in emerging legal responses to justice and human rights risks in energy and climate action, policies,

2023), https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/ [https://perma.cc/Q47P-BSCF].

7. Damilola S. Olawuyi, *Can MENA Extractive Industries Support the Global Energy Transition? Current Opportunities and Future Directions*, 8 Extractives Indus. & Soc'y J. 100685, 100587 (2020).
8. Damilola S. Olawuyi, *Energy (and Human Rights) for All: Addressing Human Rights Risks in Energy Access Projects*, *in* Energy Justice: US and International Perspectives 73, 74 (Raya Salter et al. eds., 2018).
9. *Id.* at 73–104.
10. Clean Energy Council, Addressing Modern Slavery in the Clean Energy Sector 1, 3 (2022), https://assets.cleanenergycouncil.org.au/documents/resources/reports/Addressing-Modern-Slavery-in-the-Clean-Energy-Sector.pdf [https://perma.cc/5WPH-BZP2].
11. Amnesty International, Democratic Republic of Congo: "This Is What We Die for": Human Rights Abuses in the Democratic Republic of the Congo Power the Global Trade in Cobalt (2016), https://www.amnesty.org/en/documents/afr62/3183/2016/en/ [https://perma.cc/M484-EZT7]; *see also* U.N.S.C. Res. 1952 (Nov. 29, 2010), https://www.un.org/securitycouncil/s/res/1952-%282010%29 [https://perma.cc/UK3D-R26T] (calling on all companies purchasing, processing, and consuming minerals in the DRC to apply and implement rights-based due diligence standards).
12. *Amnesty Challenges Industry Leaders to Clean Up Their Batteries*, Amnesty Int'l (Mar. 21, 2019), https://www.amnesty.org/en/latest/press-release/2019/03/amnesty-challenges-industry-leaders-to-clean-up-their-batteries/ [https://perma.cc/BLB2-5WSA].
13. *The World Bank in DRC*, The World Bank, https://www.worldbank.org/en/country/drc/overview [https://perma.cc/DN8R-A282] (Mar. 29, 2023); *Democratic Republic of Congo—Country Commercial Guide*, Int'l Trade Admin. U.S. Dep't of Commerce, https://www.trade.gov/country-commercial-guides/democratic-republic-congo-energy [https://perma.cc/X8TP-8PKR].
14. *See* Damilola Olawuyi, Extractives Industry Law in Africa 1–25 (Springer Cham, 2018); Robin Goad, *New Cobalt Supply Central to Growing Electric Vehicle Market*, Canadian Mining J. (Jan. 1, 2019), https://s1.q4cdn.com/337451660/files/doc_downloads/in-the-media/190101-Canadian-Mining-Journal-Cobalt-Commentary.pdf [https://perma.cc/HJA4-2H9K] (stating that regardless of its history of poor human rights record, corruption, instability, and environmental concerns, the DRC will continue to be the world's largest producer of cobalt).
15. *See generally* Int'l Labour Off., *A Just Transition for All: Can the Past Inform the Future*, 6 Int'l J. of Labour Rsch. (2014), https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_375223.pdf [https://perma.cc/4GZF-XKHM]; *see also* Conference of the Parties, Adoption of the Paris Agreement, Dec. 12, 2015, Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104. The Paris Agreement in its preamble refers to "Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality of job in accordance with nationally defined development priorities."
16. In its preamble, the Paris Agreement stipulates that all parties and stakeholders shall, in all climate change-related actions, respect, protect, promote, and fulfill human rights for all. Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.
17. *See id.* at arts. 2(1), 4, 6, 7; *see also* U.N. Off. of the High Comm'r for Hum. Rts. Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework, 1, 3–4 (2011), www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf [https://perma.cc/K8NZ-MVEC] [hereinafter U.N. OHCHRGPs].

and projects. Part IV proffers recommendations on the guiding principles of a justice governance framework that could enable climate and energy regulators worldwide to holistically address justice and human rights failures in the design and implementation of transition policies. Part V is a brief conclusion.

II. Unjust Transitions: Drivers and Manifestations of Injustice in Climate and Energy Policies

While there are considerable differences in the climate and energy justice movements, both movements investigate the root causes—and consequences—of regulatory failure in the design and implementation of climate and energy access projects and policies.[18] Generally, the literature on energy policy failure define a failed energy policy as "any energy policy which does not meet local, national, and international energy and climate goals across the activities of the energy life-cycle and where just outcomes are not delivered."[19] Both climate and energy justice movements therefore emphasize that any policy that fails to deliver just, inclusive, equitable, and human rights-based outcomes will ultimately fail to advance sustainable development in local communities.[20] Both movements stress the need to address justice and human rights impacts of climate and energy policies as a prerequisite for effective and successful regulatory outcomes.[21] A failed or unjust policy in this context is analyzed and assessed with respect to how climate and energy policy frameworks effectively achieve targets and deadlines on pollution control and energy efficiency, improve health outcomes, and its overall advancement of human rights, environmental justice, and sustainable development in local communities.[22] Just climate and energy policies therefore entail the fair and equitable distribution of the benefits and burdens of climate and energy policies—especially transition policies—and the integration of human rights norms in decisionmaking across the entire energy value chain.[23]

The just transition discourse reflects ongoing global debates on the need for governments, business enterprises, and other stakeholders across all key sectors to respect, protect, and fulfill fundamental human rights in all spheres of their operations. Several resolutions, declarations, and expert reports, such as the UNGPs and the African Union's 2012 Resolution on a Human Rights-Based Approach to Natural Resources Governance, have emerged.[24] These instruments state that business enterprises, including energy operators, have a responsibility to respect, protect, and fulfill human rights in their operations and investments.[25] Without a justice perspective, projects aimed at addressing the direct and indirect impacts of climate change and advancing access to modern energy services for all may result in air, water, and land pollution. These projects will also exacerbate climate change and complicate human rights situations, especially in already vulnerable communities.[26] "Studies identify five forms of climate and energy justice: procedural, distributive, restorative, recognition, and cosmopolitan."[27] The failure of climate and energy regulation, policies, and projects exacerbates injustice across each of these five elements.[28] First, the uneven distribution of opportunities and burdens can trigger distributive injustice in the planning and implementation of climate and energy access projects. For example, while climate change impacts will be felt worldwide, its impacts are already disproportionately felt in already vulnerable communities and by marginalized groups such as women and youth.[29] Similarly, many Indigenous communities across the world that are home to vital natural resources still lack access to basic energy, health, and education infrastructure and face disproportionate exposure to adverse environmental impacts, with an often-cited example being the Niger Delta communities in Nigeria.[30] The inequitable distribution of the benefits and burdens of resource production heightens energy injustice in such communities.

Furthermore, the prevalence of gender injustice, as a subset of distributive injustice, poses further challenges. Recent studies have shown how preexisting patterns of gender-based exclusions in the framing of energy policies mean that women in Africa and Asia may bear disproportionate impacts of climate change and energy poverty.[31]

18. Damilola Olawuyi, *Advancing Climate Justice in International Law: An Evaluation of the United Nations Human Rights-Based Approach*, 11 Fla. A&M U.L. Rev. 103, 103–24 (2015).
19. *See* Maciej M. Sokołowski & Raphael J. Heffron, *Defining and Conceptualising Energy Policy Failure: The When, Where, Why, and How*, 161 Energy Pol'y, at 4 (2022); Pim Derwort et al., *Towards Productive Functions? A Systematic Review of Institutional Failure, Its Causes and Consequences*, 52 Pol'y Scis. 281, 287 (2019).
20. *See* Sokołowski & Heffron, *supra* note 19, at 5–7.
21. *See generally* Olawuyi, *supra* note 18; Inigo Del Guayo et al., Energy Justice and Energy Law 1–23 (1st ed. 2020).
22. Aare Afe Babalola & Damilola Olawuyi, *Overcoming Regulatory Failure in the Design and Implementation of Gas Flaring Policies: The Potential and Promise of an Energy Justice Approach*, 14 Sustainability, at 3 (2022).
23. Inigo Del Guayo et al., *supra* note 21, at 8, 15.
24. U.N. OHCHRGPs, *supra* note 17; *Resolution on a Human Rights-Based Approach to Natural Resources Governance*, African Commission on Human and Peoples' Rights, 51st Session, ACHPR/Res.224 (LI) (2012).
25. Damilola Olawuyi, *Corporate Accountability for the Natural Environment and Climate Change*, *in* Cambridge Companion to Business and Human Rights 234–59 (Cambridge Univ. Press, Ilias Bantekas & Michael Ashley Stein eds., 2021).
26. *Id.*
27. Babalola & Olawuyi, *supra* note 22, at 3. *See also* Shalanda Baker et al., *The Energy Justice Workbook*, Init. for Energy Just. (Dec. 2019), https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019.pdf [https://perma.cc/QEM4-EEFP].
28. Babalola & Olawuyi, *supra* note 22, at 3.
29. *Id.*
30. The adverse environmental impacts of oil and gas production in the Niger Delta area of Nigeria have been documented in several studies, including the 2011 report of the United Nation. According to the report, it could take 25 to 30 years to reverse many of the environmental and social consequences of oil spillage in the Niger Delta. *See* Michael J. Cowing, Environmental Assessment of Ogoniland, U.N. Env't Programme 12 (2011), https://wedocs.unep.org/bitstream/handle/20.500.11822/25282/ogoniland_chapter1_UNEP_OEA.pdf?sequence=1&isAllowed=y [https://perma.cc/KWR4-B68U]; *see also* Human Rights Watch, The Price of Oil: Corporate Responsibility and Human Rights Violations in Nigeria's Oil Producing Communities 113-17 (1999).
31. *See* Damilola Olawuyi, *Gender, Indigeneity and the Search for Environmental Justice in Post-Colonial Africa*, *in* Cambridge Handbook of Environment Justice and Sustainable Development 208–24 (S. Atapattu et al. eds., 2021).

These exclusions involve: uneven education, training, and empowerment opportunities for girls and women; unequal access and control of important resources, such as land, property, employment, and credit facilities for women; prevalence of social and cultural norms that assign secondary and subordinate roles to women in household, community, and national decisionmaking processes; inadequate opportunities for women to hold government and other senior leadership positions; and the increased adoption of governmental policies and programs that suppress women's experiences, perceptions, and voices.[32] Such cycles of gender-based exclusions also impact the abilities of married women in these regions to make unilateral decisions to migrate to less dangerous locations, even in times of environmental disasters, floods, and climate-induced natural disasters.[33] Furthermore, the uneven access of poor and marginalized communities and countries to the climate technologies required for mitigating and adapting to climate change raises distributive justice concerns across the Global South.[34] These issues, if they are not addressed, may exacerbate an unjust and ineffective transition to low-carbon energy sources.[35] Without an energy justice perspective, broadly framed policies and legislation aimed at addressing the twin emergencies of climate change and energy poverty may neglect the extreme vulnerabilities of Indigenous communities and marginalized groups, and they will suffer disproportionate impacts. An energy justice approach requires "the holistic and widespread implementation of five core principles of distributive justice (the PANEL principles)—Public participation; Accountability; Non-discrimination and equality; Empowerment and access to information; Legality and access to justice—in the design and implementation of energy projects and programs."[36]

Second, procedural injustice is prevalent in the energy transition. The failure to address the disproportionate burdens of climate and energy projects on marginalized and vulnerable groups such as women and young people lays a foundation for procedural injustice.[37] This is because a large segment of the population may find themselves without any concrete remedies even when their rights are adversely impacted.[38] Procedural justice emphasizes the right of all members of the public to take part in, and influence, decisionmaking processes regarding energy projects and policies that affect them.[39] The failure of policymakers to integrate all segments of the society, especially marginalized and vulnerable groups such as women and young people, in the processes by which decisions are made on energy and climate projects lays a foundation for procedural injustice. For example, even when compensation and remedies are provided for projects that impact human rights of women, studies indicate that such payments are often made to community leaders and landowners, which are usually men.[40] Without an energy justice perspective that provides fair and adequate opportunities to marginalized and vulnerable groups to participate in decisionmaking, policies, and legislation aimed at addressing the climate and energy poverty emergencies may result in a lack of effective remedies for all members of the affected public.

Third, there are major implications for social and recognition justice stemming from new climate and energy policies. Recognition injustice is driven by preexisting social ills such as conflicts, political instability, social exclusion, and discrimination based on caste, race, gender, or indigeneity that worsen the vulnerability of local or Indigenous communities to environmental impacts.[41] Unaddressed environmental pollution from energy access projects often triggers protests, restiveness, and conflicts in local and Indigenous communities, who usually clamor for environmental remediation, restoration, and compensation. "For example, many years of unabated oil spillage, gas flaring, and discharge of effluents in oil and gas producing communities has resulted in militancy, insurgency, kidnapping, and restiveness in Nigeria and several other oil- and gas-rich Middle East and African ("MEA") countries."[42] The high level of insecurity continues to significantly weaken investor confidence in several MEA countries, which further weakens the cross-border inflow of SDG-related investments needed to advance energy infrastructure and energy transition projects.[43] Several MEA countries are therefore trapped in a vicious cycle of trying to attract the critical investments and technologies needed to address environmental pollution and advance low-carbon development, while the high risk of insecurity on the ground means that most developed countries often prefer to situate their investments in safer and less risky energy markets.[44] Without recognizing and addressing the wide range of social, economic, and environmental impacts of energy and climate projects on local communities, recognition justice may remain elusive in energy-rich countries, and this may slow the progress of global efforts to advance energy security and transition.

Fourth, without a human rights perspective, climate and energy policies can drive restorative injustice in local communities. Restorative justice requires "even-handed enforcement of energy statutes and regulations, as well as access to remedies when legal rights are violated."[45] Cli-

32. *Id.*; Women at the Frontline of Climate Change: Gender Risks and Hopes: A Rapid Response Assessment 6 (C. Nellemann et al. eds., 2011); Stephanie Seguino, *Toward Gender Justice: Confronting Stratification and Power*, 2 Multidisciplinary J. Gender Studs. 1–36 (2013).
33. Olawuyi, *supra* note 31, at 214–15.
34. Damilola Olawuyi, *From Technology Transfer to Technology Absorption: Addressing Climate Technology Gaps in Africa*, 36 J. Energy & Nat. Res. L. 61–84 (2018).
35. *Id.*
36. Olawuyi, *supra* note 25, at 234–36.
37. Olawuyi, *supra* note 31, at 208–24.
38. *Id.*
39. Babalola & Olawuyi, *supra* note 22, at 4.
40. *Id.*; *see also* Damilola Olawuyi, The Human Rights Based Approach to Carbon Finance 1–25 (Cambridge Univ. Press, 2016).
41. Inigo Del Guayo et al., *supra* note 21, at 1–23.
42. Babalola & Olawuyi, *supra* note 22, at 4.
43. *See* Andreas Rechkemmer & Damilola Olawuyi, *Strengthen the Means of Implementation and Revitalize the Global Partnership for Sustainable Development*, *in* The UN Sustainable Development Goals: A Commentary 1247, 1283 (Oxford Univ. Press, 2023).
44. *See id.* at 1283.
45. Inigo Del Guayo et al., *supra* note 21, at 9.

mate and energy justice projects trigger restorative injustice in cases where the policies laid down on remediation or restoration are unclear, inadequate, or are applied selectively or inconsistently.[46] Additionally, the high cost of litigation, delays in the judicial process, and technical requirements often make it impossible for local communities to access remedies in courts in a fair and timely manner.[47] This results in restorative injustice to local communities, which may be left without access to remedy.[48] Another key driver of restorative injustice associated with the energy industry is the lack of stringent penalties that can deter environmental pollution in the first place.[49] For example, several MEA countries do not have comprehensive legislation to deter environmental pollution in the energy industry, or in cases where penalties or fines do exist, they are meager and insufficient to deter pollution.[50] Similarly, a lack of comprehensive financial assurance mechanisms such as security deposits, insurance, or environmental performance bonds may trigger restorative injustice. Financial mechanisms are required to ensure that, in all cases, energy operators that pollute the environment bear the full cost of environmental restoration in line with the polluter-pays principle.[51] Without financial mechanisms to ensure remediation and restoration, operators may simply abandon or transfer production licenses and operations, which may leave the public without any remedy for the pollution and harm suffered.[52]

Fifth, without justice perspectives, the development and implementation of net-zero transition policies across the world may trigger cosmopolitan injustice in Global South countries. Cosmopolitan justice emphasizes the need to address the cross-border impacts of climate change and energy transition activities, projects, and policies so as to avoid unintended adverse human rights impacts in already vulnerable countries.[53] This includes ensuring that the burden of decarbonization does not unduly fall on developing countries, in accordance with the well-established common but differentiated responsibility and respective capabilities (CBDR-RC) principle of international law.[54] For example, commentators have already expressed the fear that developing countries in Africa, Asia, and Latin America may become the "involuntary sacrificial lamb for net zero" due to the expected escalation of energy poverty levels in these regions that the drive to end emissions might exacerbate.[55] The ongoing global energy transition raises fundamental questions on how the increasing bans and reduced financing of environmentally preferable products, such as natural gas, due to decarbonization policies may adversely impact the abilities of energy-poor but natural gas-rich Global South countries to advance energy security.[56] As financial institutions are now showing diminishing appetite for financing new oil and gas fields, the abilities of several Global South countries to finance climate infrastructure projects are also being impacted.[57] Debates on cosmopolitan injustices are bound to increase as countries adopt climate change-focused laws and regulations that constrain economic socio-development across the Global South. There is therefore a need for policymakers and stakeholders across the energy sector to design and implement holistic energy policies and guidelines that effectively address the transboundary implications of decarbonization and net-zero transition across the entire global energy value chain. Without a cosmopolitan justice perspective, efforts aimed at addressing climate change may exacerbate energy poverty, worsen unemployment levels, and stifle progress on all aspects of the SDGs in Global South countries.

Given these significant justice dimensions of climate and energy projects and policies, there is a need to place human rights squarely at the heart of climate and energy planning in order to avoid unjust and incoherent net-zero transition. There is an urgent imperative for energy policymakers worldwide to design and implement effective policies that address all dimensions of the justice risks related to efforts designed to address both the climate change and energy poverty emergencies. Understanding and addressing the coherence gaps that limit the overall effectiveness of emerging legal responses to justice risks in energy and climate action, policies, and projects can help policymakers to plot a better path for rights-based reform.

III. Coherence Gaps in Emerging Legal Responses to Justice and Human Rights Risks

Despite the rise in targeted programs and policies aimed at addressing climate and energy injustice across the Global South, the lack of a committed justice governance approach that addresses both structural and non-structural challenges to implementation has resulted in incoherent

46. Babalola & Olawuyi, *supra* note 22, at 4.
47. *Id.*
48. *Id. See also* Ayodele Morocco-Clarke, *In the Midst of So Much Injustice, Can There Be a Seat for Energy Justice at the Nigerian Table?*, J. World Energy L. & Bus. (2023).
49. Babalola & Olawuyi, *supra* note 22, at 4–5.
50. U.N. Econ. & Soc. Comm'n for W. Asia, *Reducing Gas Flaring in Arab Countries: A Sustainable Development Necessity*, U.N. Doc. E/ESCWA/SDPD/2019/TP.9, 8 tbl. 3 (2019) https://www.unescwa.org/publications/reducing-gas-flaring-arab-countries-sustainable-development-necessity [https://perma.cc/6LW4-S3ZV] [hereinafter UNESCWA: Reducing Gas Flaring].
51. Knud Sinding & Philip Peck, *Financial Assurance and Mine Closure: Stakeholder Expectations and Effects on Operating Decisions*, 34 Res. Pol'y 227 (2009).
52. *Id.*; *see also* Olawuyi, *supra* note 2, at 253–54.
53. *See* Babalola & Olawuyi, *supra* note 22, at 4.
54. *See* Damilola Olawuyi, *The Role of Natural Gas in a Just and Equitable Energy Transition*, *in* Damilola Olawuyi & E. Pereira, The Palgrave Handbook of Natural Gas and Global Energy Transitions 73–95 (Palgrave Macmillan, 2022).
55. Gyude Moore, *Africa Must Not Be the West's Sacrificial Lamb for Net Zero at COP26*, African Bus. (Oct. 27, 2021), https://african.business/2021/10/energy-resources/africa-must-not-be-the-wests-sacrificial-lamb-for-net-zero-at-cop26/ [https://perma.cc/292V-FZYA]; Samaila Zubairu, *COP26: Africa Charts a Complex Road to Net Zero*, African Bus. (Oct. 31, 2021), https://african.business/2021/10/energy-resources/africas-complex-road-to-net-zero/ [https://perma.cc/WJ2K-4JHH].
56. Olawuyi, *supra* note 54, at 2–15.
57. *HSBC Announces It Will No Longer Finance New Oil and Gas Fields—Share Action Response*, Share Action (Dec. 14, 2022), https://shareaction.org/news/hsbc-announces-it-will-no-longer-finance-new-oil-and-gas-fields-shareaction-response [https://perma.cc/99B-QE69].

application.[58] Equity and justice gaps in the design and implementation of climate and energy justice programs across the MEA region are surveyed and discussed below. Transferable lessons on how other Global South countries can better understand and address justice and human rights gaps in the implementation of climate and energy policies are also highlighted.

A. *Lack of Clear Integration of Human Rights Norms Into Climate and Energy Policies*

The first real barrier to the design and implementation of rights-based climate and energy policies is the failure to clearly integrate human rights norms into climate and energy policies and legislation. This is the question of whether, and to what extent, human rights principles underpin or form part of the rules of the game with respect to the licensing, approval, and implementation of climate and energy projects. Does the overarching energy policy or legislation specifically mention or recognize gender justice, public participation, empowerment, and the other elements of the PANEL principles? In Nigeria, for example, a review of all the applicable legislation in the energy sector indicates that human rights or gender justice are not even mentioned.[59] Similarly, the integration of core human rights principles into energy-sector guidelines, including those relating to climate infrastructure development, remains a moving target.[60]

Furthermore, several procedural barriers continue to stifle the practical efficacy of climate and energy justice policies in Nigeria, as well as in several other MEA countries.[61] These include inadequate representation of vulnerable and marginalized groups such as women and young people in decisionmaking processes; insufficient access to governmental records and information; and lack of formal mechanisms to provide legal representation and aid for victims of gas flaring that cannot afford litigation, amongst other challenges.[62]

The design of climate and energy policies without due consideration of the specific patterns of vulnerabilities of local communities and marginalized groups provides lopsided and incompatible energy policies that do not deliver distributive and restorative justice to the communities most affected by adverse social, economic, and environmental impacts of such projects. The starting point for formulating just and effective climate and energy policies should therefore be a rights-based conceptualization and assessment of the drivers and implications of injustice in local contexts. For example, electricity expansion programs and policies should clearly identify the structural and infrastructure gaps that make accessibility, affordability, and reliability difficult or impracticable in all communities, especially the typically marginalized and vulnerable communities. Failure to do so will result in failed energy policies that worsen patterns of social exclusions in some communities. Similarly, in cases of energy and climate infrastructure and technology gaps, such policies must identify opportunities for multi-sectoral, multi-stakeholder, multi-level implementation of infrastructure expansion projects and grid connection along with the roles of different stakeholders in the public and private spheres to ensure that no one is left behind.

Contextualizing the specific drivers of injustice in the implementation of climate and energy policies will provide the essential foundation for formulating holistic and comprehensive national energy policies and strategies on climate change and energy access. Such holistic policies will not only foster acceptance and trust by local communities but will also yield additional co-benefits that could advance progress on industry-community partnerships, energy citizenship, and the integration of human rights into climate actions.

B. *Absence or Inadequacy of Climate Change Laws*

Another key challenge is the absence of stringent and coherent laws on climate change. As efforts to address the problem of climate change gain momentum across the Global South, it is imperative to elaborate the essential guiding principles and standards for integrating human rights safeguards into such efforts. While national visions and strategies that set the target of achieving climate change mitigation and adaptation are increasing worldwide, several Global South countries have yet to enact specific or comprehensive laws to achieve those targets and deadlines.[63] For example, while the Qatar National Vision 2030, expressly identifies climate change mitigation and adaptation as a national priority, clear, specific, and comprehensive legislation on climate change proofing is still in the works.[64] The importance of domestic legislation and regulation in advancing climate and energy justice cannot be overemphasized. A clear legal framework on climate change can provide the legal basis and obligation for project planners and stakeholders to integrate human rights considerations into the design, operation, and maintenance of climate

58. *See generally* Morocco-Clarke, *supra* note 48; Olawuyi, *supra* note 2, at 254–66.

59. Damilola Olawuyi & Tubondenyefa Zibima, Review of the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria 8 (2018), https://docs.wixstatic.com/ugd/60b422_74da66d41dfa41b2963c73772cffafd1.pdf [https://perma.cc/SNN4-DYTJ].

60. Babalola & Olawuyi, *supra* note 22, at 8.

61. *Id.*; *see also* Damilola Olawuyi, Environmental Law in Arab States 102–10 (2022).

62. Damilola Olawuyi, Environmental Law in Arab States 108 (2022).

63. For example, Kenya enacted the Climate Change Act in May 2016, while Nigeria enacted the Climate Change Act 2021 on November 17, 2021, in conformity with the Paris Agreement on climate change. *See* Kenya's Climate Change Act, Act No. 11 of 2016, http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=No.%2011%20of%202016 [https://perma.cc/Z5XQ-T7S3]; *see also* Government of Nigeria, Climate Change Act 2021, NGA-2021-L-112597, https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=112597&p_count=22&p_classification=01 [https://perma.cc/5YGM-CFDZ]. For other efforts across the Global South, see Assouli et al., *supra* note 4.

64. Assouli et al., *supra* note 4. *See also* Damilola Olawuyi & Elena Athwal, *Law and Governance Innovations on Sustainability in Qatar*, *in* Logan Cochrane and Reem-Al Habibi, Eds., Sustainable Qatar 37–54 (2022).

and energy transition infrastructure.[65] Climate legislation can also provide project developers and planners clarity on the key design standards and measures that planners are to comply with at the project design and approval stage. Furthermore, financing bodies and other participants and investors will want to have a clear understanding of a country's project approval processes, impact assessments, efficiency standards, eligible renewable technologies, registration and certification of projects, verification, validation, reporting, and monitoring. These are questions that must be carefully laid out in legal frameworks designed to clarify and govern climate change mitigation and adaptation. A well-designed climate legislation can provide a framework for coordinated, systematic, and effective climate response by a wide range of policymakers and decisionmakers in different sectors of the economy and society in a manner that places human rights squarely at the heart of such efforts.[66]

Climate change-related laws can also be very helpful in addressing specific impacts of climate action and energy transition projects on vulnerable and marginalized communities. For example, certain laws in a country may make it impossible for women and youths to participate in decisionmaking processes. Similarly, local investment laws that stipulate that public infrastructure can only be managed and maintained by the national authority may weaken energy citizenship and the homegrown development of climate technologies.[67] Such laws could serve as disincentive to broad private-sector participation and investment in climate infrastructure projects that results in participatory injustice. Given the urgent need to address such injustice questions as energy transition efforts reach global momentum, a specific climate legislation could create exemptions for climate resiliency projects and provide incentives for private-sector participation, especially in priority climate and sustainable development projects.[68]

C. Limited Institutional Coordination

Managing justice risks across various sectors will require the participation of different ministries and stakeholders. For example, the mandate to supervise energy access and climate-resilient infrastructure remains under the purview of separate institutions like national disaster response agencies and national planning ministries and departments responsible for energy, water, agriculture, construction, finance, and interior, among others.[69] Many of these agencies have distinct financial and resource allocations and usually have conflicting priorities. Consequently, despite the common justice risks in energy and climate projects, the lack of interoperability and institutional coordination across the various agencies makes it complex to gain a systemic and multiscale view of climate and energy justice programs. To enhance just and inclusive climate and energy planning, it is essential to enhance institutional coordination amongst the various agencies and sectors.[70]

Institutional coordination can be enhanced through pragmatic and standardized approaches that foster cooperation and minimize duplication. This will require building shared and common understanding by institutional actors in the diverse domains, sharing knowledge in open and linked systems, and constituting cross-sectorial panels and committees that can provide an informed picture of infrastructure interdependencies and interplay. A necessary starting point will be to elaborate and develop cross-sector analysis of the key institutions at the municipal, local, national, basin, transboundary and regional levels that have important roles to play in an integrated climate-proofing process.[71] Such analysis will examine whether the mandates of existing institutions are coherent, conflicting, or duplicative. The analysis will also scrutinize whether there are linked platforms in place to support knowledge and information-sharing and intersectoral cooperation. For example, institutions can leverage their respective expertise, facilities, and best practices by engaging with staff and experts across sectors to assist with reviewing and assessing multisector projects. Interagency linkages and partnerships, through joint initiatives and knowledge-sharing, could increase trust and enhance synergic solutions that can advance right-based analyses and planning.

D. Data Transparency Gaps

Another key driver of regulatory failure in managing justice risks in climate and energy programs is the lack of transparent and verifiable statistical data on patterns of implementation of related projects and programs.[72] As can be seen across the MEA region, even when pollution reduction and public participation standards have been specified, a lack of transparent and accessible statistical data on levels of compliance with environmental standards remains a key barrier to climate and energy justice.[73] In several MEA countries, members of the public are simply unable to access information on penalties assessed for noncompliance, and the number of operators that have been sanctioned or have lost

65. *See* Australian Gov't, Dep't of Climate Change & Energy Efficiency, The Role of Regulation in Facilitating or Constraining Adaptation to Climate Change for Australian Infrastructure xii (2011) (stating that the resilience of infrastructure to the effects of climate change will depend upon the applicable regulatory framework that eliminates and responds to climate risks).
66. Barry Barton & Jennifer Campion, *Climate Change Legislation: Law for Sound Climate Policy Making*, *in* Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transitions 23–37 (Donald Zillman ed., 2018).
67. Damilola Olawuyi, *From Energy Consumers to Energy Citizens: Legal Dimensions of Energy Citizenship*, *in* 26 Sustainable Energy Democracy and the Law 101–23 (Fleming et al. eds., 2021).
68. *See* Barton & Campion, *supra* note 66, at 23–37 (identifying five important elements of a comprehensive climate legislation).
69. *See* Damilola Olawuyi, *Sustainable Development and the Water-Energy-Food Nexus: Legal Challenges and Emerging Solutions*, 103 J. Env't Sci. & Pol'y (2020).
70. Third U.N. World Conference, *Sendai Framework for Limiting the Risks of Disasters 2015-2030*, para. 19(f) (2015) (noting the need to coordinate the roles of national and federal State Governments in order to enhance disaster risk reduction and the sharing of resources, incentives, and decisionmaking responsibilities).
71. *Id.*
72. Babalola & Olawuyi, *supra* note 22, at 10.
73. *Id.* at 8–9; *see also* UNESCWA: Reducing Gas Flaring, *supra* note 50, at 3.

their licenses due to noncompliance.[74] Apart from their informational value for local communities and their value in showing that a country is strict about enforcing environmental standards in the energy sector, open and transparent collation of environmental compliance records can also enable all government agencies and ministries to design and implement their policies and programs in an informed manner. For example, during public procurement or licensing processes, government agencies can identify entities with sound environment, social, and governance ("ESG") practices, while screening our entities with poor records.

There is a clear and urgent need to enforce comprehensive data collection by governments, corporations, and other entities in order to observe the level of compliance with emission reduction obligations under applicable laws. In addition to data collection on GHG reduction programs, there is also a need for improved and more precise data collection and measurement of actual impacts of government energy assistance programs in local communities. As energy access and net-zero emission policies gain momentum worldwide, there is a need for national regulators to enforce data reporting and verification requirements. This includes creating greater awareness of the obligations of energy operators to transparently disclose statistical data on the GHG emissions and the need for regulators to actively collect data on the number of households that are escaping energy poverty due to energy access and assistance programs. Such data will not only enhance the effectiveness of programs aimed at addressing climate and energy injustice, but it will also enable regulators to effectively map and address specific landscape of vulnerability. Verifying and publishing information about climate and energy access programs is essential to provide regulators with reliable and searchable data on the success or failure of policies and to indicate how the resulting gaps can be addressed.

IV. Toward a Justice Governance Approach in Climate and Energy Planning

The increasing elaboration of national visions and targets on climate change and energy access for all across the Global South reflects political commitment toward tackling the multidimensional drivers and dimensions of climate and energy justice. The next step, however, is for national authorities to develop a comprehensive and holistic legal framework to support the integration of human rights safeguards into overall national planning and development processes, as well as disaster and emergency response processes.

First, the drivers of climate and energy injustice are interlinked and cannot be effectively addressed in isolation.[75] Therefore, a starting point is for national authorities to develop clear national strategies on just transition that elaborate on integrated climate and energy justice objectives, priority areas, and the opportunities and requirements for private-sector participation in identified areas. To develop comprehensive national strategies on just energy transition, there is a need for cross-sector analysis and conceptual development of the various sectors that can be affected by climate change and energy poverty, and a description of how integrated response programs can be implemented, monitored, and supervised across the diverse domains. A national strategy on just and inclusive energy transition can also help detect and address conflicting or overlapping programs; strategies and rules across the different sectors and institutions, such as water, energy, food, sustainable development; and national planning. Further, it can allow for the development of consistent and coherent programs that eliminate overlap and inconsistencies. Such an operational framework will make it possible to evaluate the practical efficiency of energy transition programs and to measure and monitor progress based on predetermined timelines.

Second, in addition to developing clear strategies on climate and energy justice, it is pertinent to develop clear and comprehensive laws on climate change to provide a legal basis and obligation for project planners and stakeholders to integrate human rights considerations into the design, operation, and maintenance of climate and energy infrastructure projects. By clarifying key design standards and measures that planners have to comply with at the project design and approval stage, a comprehensive legal framework could also address questions relating to permitting, licensing, efficiency standards, and financing instruments and opportunities amongst others. It is also crucial to establish comprehensive laws on public-private partnerships investments to simplify and promote private investment and participation in public climate and energy infrastructure projects.[76]

Third, to enable informed decisionmaking on the implementation of just, inclusive, and rights-based energy and climate policies, timely and proactive reporting of data and information is essential. Several factors that hinder the proactive reporting, verification, and disclosure of project data will need to be carefully addressed at all levels. Initially, there is a need for clear specific regulation and policies that require operators to proactively report data relating to various aspects of justice risks in climate and energy planning.[77] Such regulation should elaborate the type and level of information to be provided, which will vary from country to country. Relevant information will include those relating to GHG emissions, energy assistance programs, budgets and investments in pollution minimization technologies, and community response and development programs implemented within the reporting period, among

74. Babalola & Olawuyi, *supra* note 22, at 9–10.

75. *See* Damilola Olawuyi, *Sustainable Development and the Water-Energy-Food Nexus: Legal Challenges and Emerging Solutions*, 103 J. Env't Sci. & Pol'y 1, 4 (2019).

76. For a discussion of the importance and scope of such PPP laws, see Damilola Olawuyi, *Advancing Innovations in Renewable Energy Technologies as Alternatives to Fossil Fuel Use in the Middle East: Trends, Limitations, and Ways Forward*, *in* Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transitions (Donald Zillman ed., 2018).

77. *See Regulatory Energy Transition Accelerator Launched at COP26 by IEA, Ofgem, IRENA and the World Bank*, IEA (Nov. 3, 2021), https://www.iea.org/news/regulatory-energy-transition-accelerator-launched-at-cop26-by-iea-ofgem-irena-and-the-world-bank [https://perma.cc/9K7B-J89N].

other information. Furthermore, stringent penalties and sanctions should be specified for late, erroneous, or fraudulent reporting, while specific guidelines on the language and format of such reports should be clearly specified in order to ensure their accessibility for local communities. In addition to mandating proactive reporting, there is a need for energy regulators to proactively analyze and disclose operational data so that members of the public can fully understand the efforts made to enforce compliance.[78] A starting point is to establish a searchable online enforcement and compliance database that provides clear and transparent information on pollution investigations, penalties levied on defaulters, and programs implemented to enhance access to remedies for affected members of the public. There is a need for governments and regulators to invest in modern technology infrastructures that will improve and modernize data collection and information-sharing across the entire project life cycle.

Finally, to promote the wide-scale development of multiscale, multisector, and integrated responses to justice risks in climate and energy planning, it is important to designate a focal institution or administrative unit that will coordinate the design, approval, and implementation of such projects across various sectors.[79] For example, extant national climate, environmental, and energy response agencies can be expanded and enhanced to integrate human rights into their scope of work. Alternatively, national coordination committees that bring together all key ministries, agencies, and entities responsible for climate and energy programs can be established to put in place a memorandum of common understanding that will enable all stakeholders to share information and policies on climate and energy justice. Apart from serving as a one-stop shop that will streamline the approval processes for projects, a coordination committee would also provide capacity development opportunities for administrators to acquire technical knowledge about the methods, requirements, and challenges of implementing human rights safeguards in climate and energy planning. There is also a need to establish interlinked knowledge-sharing systems that allow government agencies to access the latest and most up-to-date information about relevant programs in other agencies, in order to address the challenges of role duplication and conflicting information. This would help ensure systematized documentation and standardization of plans, timelines, projects, and programs across the energy industry.

V. Conclusion

Efforts to address sustainable development concerns, such as delivering clean, affordable, low-carbon energy to address climate change, may complicate human rights situations in vulnerable and low-income communities, especially in the Global South, if appropriate safeguards are not put in place.

As demonstrated in this Article, despite the emergence of several international law instruments designed to respect, protect, and fulfill human rights in the quest for sustainable development, the search for climate and energy justice in several Global South countries remains elusive and incomplete. The lack of clear and comprehensive conceptualization, assessment, and reporting of patterns of climate and energy injustice in policymaking and planning is exacerbated by the absence of national-level master plans and strategies to advance the comprehensive integration of human rights norms in the design and implementation of climate and energy programs and projects. Furthermore, institutional fragmentation and lack of systemic coordination in the implementation of climate and energy policies have not provided adequate opportunities for harmonized and coordinated solutions to the intertwined problems of climate change and energy poverty.

A mix of structural and non-structural reforms is needed to address the identified gaps in order to advance equity in the development and implementation of climate and energy policies. Structural measures include developing responsible energy and climate-smart infrastructure investments to defeat energy poverty, enhance climate resilience in vulnerable communities, and technologies to enhance interoperability amongst regulatory institutions. Non-structural measures, on the other hand, will include putting in place laws, policies, and rules to promote sound human rights and ESG outcomes in climate and energy actions and projects. This will include enacting specific and comprehensive climate change laws that clearly integrate human rights standards that project planners must follow in the design, financing, and implementation of climate and energy policies and projects. The role of higher education institutions ("HEIs"), especially law schools, in promoting capacity and training on a right-based approach to addressing the climate change and energy poverty emergencies cannot be overemphasized. By designing tailored ESG-focused programs—LL.M., SJD, Executive Certificate programs—that unpack human rights due diligence approaches for energy and climate planning, HEIs can be at the forefront of dismantling climate and energy injustice through education, awareness, and human empowerment.

78. *Id.*
79. *See, e.g.*, Third U.N. World Conference, *supra* note 70, at para 25(h) (identifying the need for a designated national focal point for implementing disaster risk reduction initiatives, including climate adaptation projects, with clearly assigned responsibilities and authority to coordinate action and multisectoral cooperation).

CREATING A TRANSPARENT METHODOLOGY TO MEASURE SUCCESS WITHIN A CONTINUUM OF CONSERVATION FOR THE AMERICA THE BEAUTIFUL INITIATIVE

Jamie Pleune*

ABSTRACT

On January 27, 2021, the Joseph Biden Administration identified the national goal of conserving at least 30% of our lands and waters by 2030. With this order, the America the Beautiful Initiative ("ATB Initiative") was born, and the United States joined many other nations in adopting the 30 x 30 conservation target. However, beneath the lofty aspiration lay ambiguity. The Administration has not defined the term "conservation" or explained how it will be measured. Without a clear definition or metric for measuring the outcome of conservation projects, the ATB Initiative will lose credibility. The Biden Administration should avoid this result by adopting Conservation Report Cards. This approach enables recognition of the full "continuum of conservation," without suggesting that each project has the same ecological benefit. A similar reporting methodology is already available and being utilized in the voluntary carbon credit market, which includes a wide range of conservation projects with varying degrees of conservation efficacy. Conservation Report Cards would preserve the credibility of the ATB Initiative and facilitate future conservation efforts by transparently disclosing the goals, management protocols, outcomes, and durability of projects included within the ATB Initiative.

I. Introduction

On January 27, 2021, the Joseph Biden Administration identified the national goal of conserving at least 30% of our lands and waters by 2030 in Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*.[1] With this Order, the America the Beautiful Initiative ("ATB Initiative") was born, and the United States joined many other nations in adopting the 30 x 30 conservation target.[2]

The 30 x 30 target is an internationally recognized goal to preserve 30% of the Earth's land and waters by 2030 as a strategy for ameliorating both climate change and species extinction.[3] In the beginning of 2021, at the time of President Biden's announcement, more than 50 nations had endorsed the initiative through the High Ambition Coalition for Nature and People.[4] As of June 30, 2022, that number had swelled to over 100, which is more than half of the world's countries.[5] As a result of this support, the 30

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1. Exec. Order No. 14008, Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7627 (Jan. 27, 2021).

2. *See infra* notes 68–77 and accompanying text.

3. Madhu Rao, *Global Ambition for a 30x30 Protection Target: An Opportunity to Diversify Governance and Management Regimes*, IUCN World Conservation Cong. Blog (Apr. 20, 2021), https://www.iucncongress2020.org/newsroom/all-news/global-ambition-30x30-protection-target-opportunity-diversify-governance-and [https://perma.cc/2ZKT-BTNU] ("The importance of sustained efforts to secure large intact landscapes to stem biodiversity loss, mitigate the impacts of climate change, and reduce the risks of future pandemics has never been clearer.").

4. Patrick Greenfield & Fiona Harvey, *More Than 50 Countries Commit to Protection of 30% of Earth's Land and Oceans*, The Guardian (Jan. 11, 2021, 12:44 PM), https://www.theguardian.com/environment/2021/jan/11/50-countries-commit-to-protection-of-30-of-earths-land-and-oceans [https://perma.cc/UR34-HDJV].

5. *See More Than 100 Countries Now Formally Support the Global Target to Protect at Least 30% of the Planet's Land and Ocean by 2030*, High Ambition

x 30 target has become a cornerstone of the draft agreement in development by the UN Convention on Biological Diversity.[6] It was also identified as an important climate change adaptation strategy in the most recent assessment report of the Intergovernmental Panel on Climate Change[7]: "Recent analyses, drawing on a range of lines of evidence, suggest that maintaining the resilience of biodiversity and ecosystem services at a global scale depends on effective and equitable conservation of approximately 30% to 50% of the Earth's land, freshwater, and ocean areas."[8]

Within the United States, the 30 x 30 target enjoys broad popular support.[9] The most recent "Conservation in the West Poll" surveying the attitudes of voters in eight western states found that 77% of voters support the 30 x 30 target.[10] Importantly, support for the target is consistent across the political spectrum of voters, with support ranging from 60% of Republicans polled, 79% of Independents, and 92% of Democrats.[11] Additionally, 80% of the voters polled supported creating new national parks, monuments, wildlife refuges, and tribal protected areas in pursuit of the 30 x 30 target.[12] Looking at individual states, more than three-in-five people supported creating new protected public lands.[13]

Despite its popularity, the 30 x 30 target has political opponents. This spring, several conservative lawmakers gathered in Nebraska on Earth Day at the "Stop 30 x 30 Summit."[14] Promotional materials promised that the event would "spoil environmentalists' Earth Day."[15] Politicians touted the "The 30 x 30 Termination Act"[16] and characterized the ATB Initiative as a "massive land grab being pursued by the Biden Administration at the behest of extremist environmentalists."[17] Some opponents fear that the 30% target will restrict mineral development or reduce multiple uses, like grazing allotments, on federal lands.[18] Others worry about commercial fishing restrictions.[19] The governor of Nebraska, Pete Ricketts, was so opposed to the initiative that he issued his own executive order, "Stop 30x30—Protect Our Land & Water," in which he mandated a series of workshops from the Department of Revenue to educate county officials about how to block conservation easements.[20] He also instructed all agencies to "take any necessary step to resist and prevent the federal government's attempt to usurp state authority as they implement the 30 x 30 goal."[21]

Perhaps in an effort to sidestep this controversy, the White House focused on re-branding the 30 x 30 target as the America the Beautiful Initiative ("ATB Initiative").[22] It described the initiative as a 10-year, locally led campaign to conserve and restore the lands and waters upon which we all depend that bind us together as Americans.[23] Emphasizing themes of stewardship, voluntary conservation practices, and local control, the ATB Initiative promised to advance the economy by addressing three interconnected challenges: biodiversity loss, climate change, and inequitable access to nature.[24]

The Administration also focused on re-branding the word "conservation," which is often associated with restrictive land management practices that exclude humans from

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Coal. (June 30, 2022), https://www.hacfornatureandpeople.org/more-than-100-countries-now-formally-support-the-global-target-to-protect-at-least-30-of-the-planet-by-2030 [https://perma.cc/3HYY-ZKA8].

6. *See* Press Release, High Ambition Coal., Over 100 Countries Kick Off Unprecedented Action to Protect at Least 30% of the Planet by 2030 Ahead of COP15 (Sept. 22, 2022), https://www.hacfornatureandpeople.org/over-100-countries-kick-off-unprecedented-action-on-30x30-ahead-of-cop15 [https://perma.cc/AW46-4LFT].
7. Intergovernmental Panel on Climate Change, Climate Change 2022: Impacts, Adaptation and Vulnerability, Summary for Policymakers 32 (2022) [hereinafter IPCC, Climate Change 2022, Summary for Policymakers].
8. *Id.*
9. *See* Colo. Coll. State of the Rockies Project, 2022 Conservation in the West Poll: Public Lands in the West (2022), https://www.coloradocollege.edu/other/stateoftherockies/_documents/2022/2022%20State%20of%20the%20Rockies%20Topic%20Report%20on%20Public%20Lands%20d2%20002.pdf [https://perma.cc/J2WH-UQHP]; Lori Weigel & Dave Metz, *Key Findings: The 2022 Survey of the Attitudes of Voters in Eight Western States*, Colo. Coll. 39 (Jan. 2022), https://issuu.com/coloradocollege/docs/2022_state_of_the_rockies_poll_findings.pptx?e=32309167/95442576 [https://perma.cc/BEX4-45N9] (noting that this support has remained steady from 2020 to the present).
10. *Id.*
11. *Id.* at 40.
12. *Id.* at 41.
13. *Id.* at 42.
14. *"Stop 30 x 30 Summit" Set to Spoil Environmentalist's Earth Day*, Am. Stewards of Liberty (Mar. 3, 2020), https://americanstewards.us/stop-30-x-30-summit-set-to-spoil-environmentalists-earth-day/ [https://perma.cc/7DDJ-UAM4].
15. *Id.*
16. H.R. 3014, 117th Cong. (2021). *See also* Press Release, Rep. Lauren Boebert, *Rep. Boebert Introduces 30 x 30 Termination Act to Block Biden Land Grab* (May 7, 2021), https://boebert.house.gov/media/press-releases/rep-boebert-introduces-30-x-30-termination-act-block-biden-land-grab [https://perma.cc/7449-JY3P].
17. *Id.* Note that the ATB Initiative would not require the transfer of any private or state-owned land to the federal government. *See* The White House, Fact Sheet: Biden-Harris Administration Celebrates Expansion of Locally-Led Conservation Efforts in First Year of "America the Beautiful" Initiative (Dec. 20, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/20/fact-sheet-biden-harris-administration-celebrates-expansion-of-locally-led-conservation-efforts-in-first-year-of-america-the-beautiful-initiative/ [https://perma.cc/W335-R3KP] (noting that the ATB Initiative includes commitments to honor "private property rights, the sovereignty of Tribal Nations, and the values and priorities of local communities").
18. *See, e.g.*, John Stroud, *Garfield County Commissioners Formally Oppose Biden's 30x30 Climate Crisis Plan*, Aspen Times (Feb. 17, 2021), https://www.aspentimes.com/news/garfield-county-commissioners-formally-oppose-bidens-30x30-climate-crisis-plan/ [https://perma.cc/3WE5-L5A4].
19. *See, e.g.*, Mel Bagnall, *Seafood Industry Rallies to Oppose 30x30 Initiative*, Angling Int'l (Jan. 5, 2021), https://angling-international.com/2021/01/05/seafood-industry-rallies-to-oppose-30x30-initiative/ [https://perma.cc/FBM9-M8GS].
20. Jennifer Yachnin, *Opponents of 30x30 Seize on Conservation Law to Block Easements*, E&E News (May 2, 2022, 1:15 PM), https://www.eenews.net/articles/opponents-of-30x30-seize-on-conservation-law-to-block-easements/#:~:text=Opponents%20of%2030%C3%9730%20seize%20on%20conservation%20law%20to%20block%20easements&text=LINCOLN%2C%20Neb.,first%20conservation%20law%20in%201981 [https://perma.cc/6D8K-QQ98].
21. Nebraska, Exec. Order No. 21-08, *Stop 30 x 30—Protect Our Land & Water* (June 24, 2021), http://govdocs.nebraska.gov/docs/pilot/pubs/eo-files/21-08.pdf [https://perma.cc/AG55-DVHL].
22. Jennifer Yachnin, *Does Biden's "30 x 30" Plan Trade Science for Popularity?*, E&E News (June 2, 2021), https://ogcc.idaho.gov/wp-content/uploads/sites/3/EE-30x30-popularity.pdf [https://perma.cc/U9E6-HXGF] ("President Biden's new initiative is a rebranding of the '30x30 campaign'") [hereinafter Yachnin, *Does Biden's "30 x 30" Plan Trade Science for Popularity?*].
23. U.S. Dep't Interior et al., Conserving and Restoring America the Beautiful 5 (2021) [hereinafter ATB, 90-Day Report].
24. *Id.* at 7–9, 20 (characterizing the problems as: (1) the disappearance of nature; (2) climate change; and (3) inequitable access to the outdoors).

the environment.[25] The first report describing the ATB Initiative distinguished "conservation" from "protection" or "preservation."[26] However, the report did not actually define the term conservation. A few months later, in a document describing progress on the ATB Initiative, the Administration committed to recognizing a "continuum of effective conservation measures" that would include working lands and areas managed for multiple use.[27] Instead of focusing solely on public lands, the "continuum of conservation" included in the ATB Initiative would incentivize voluntary stewardship on private lands and "support efforts and visions of states and tribal nations."[28]

This ambiguous and undefined phrase, a "continuum of conservation," is broad enough to include a range of strategies—from traditional protective land designations to more innovative measures.[29] Emboldened, advocates urged the Administration to apply the "conservation" label to practices like habitat leases on private lands,[30] ranching,[31] forestry,[32] grazing,[33] farmland,[34] and commercial fishing.[35] As one reporter observed, there seemed to be "no shortage of projects that fall under the rubric."[36] The U.S. Department of the Interior ("DOI") touted the ATB Initiative "in connection to synthetic turf at a city park, 10,000 acres of new wilderness lands, and even a fee-free day for public lands."[37] In other words, this open-ended approach has led to a sprawling, incoherent collection of actions without clear direction.

The ATB Initiative remains hobbled by unanswered questions. The term "conservation" has yet to be defined, and mechanisms for measuring progress toward the 30% goal have not been announced.[38] Clearly resolving these outstanding questions is critical to the success of the ATB Initiative. On the one hand, embracing a "continuum of conservation" is an innovative and potentially effective strategy for addressing the underlying purposes of the ATB Initiative. At the same time, stretching the "continuum of conservation" too far carries significant risk. If land use practices that exacerbate biodiversity loss, contribute to climate change, or perpetuate environmental injustice are characterized as "conservation," the goals of the 30 x 30 target will be undermined. This would threaten the credibility of the ATB Initiative, making it appear more like a greenwashing tool than a national stewardship goal.[39]

To avoid this outcome, the Administration should create a transparent system of disclosure for each project included in the ATB Initiative. As discussed below in Part VI, models for this type of reporting are already available and being utilized in a variety of contexts from demon-

25. *See* Sarah Krakoff, *Public Lands, Conservation, and the Possibility of Justice*, 53 Harv. C.R.-C.L.L. Rev. 213, 227–37 (2018) (describing the "dark side" of conservation's history that promoted nature and wilderness to the detriment of Native Americans who were already living on those lands); Lesli Allison, *Redefining Conservation for a New Era*, On Land (Apr. 6, 2021), https://onland.westernlandowners.org/2021/directors-letter/directors-letter-redefining-conservation-for-a-new-era/ [https://perma.cc/C7LG-Q2UE] (describing the rural perspective that conservation "takes things away" because "[i]t takes our jobs, our land, our communities, our way of life," and arguing that for the ATB Initiative to be successful it must "move beyond 'Conservation as Usual'").
26. ATB, 90-Day Report, *supra* note 23, at 10.
27. U.S. Dep't Interior et al., Year One Report America the Beautiful 6, 16 (Dec. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/12/AtB-Year-One-Report_.pdf [https://perma.cc/4LAQ-KQPJ] [hereinafter ATB, Year One Report].
28. *Id.*
29. *See, e.g.*, Yachnin, *Does Biden's "30 x 30" Plan Trade Science for Popularity?*, *supra* note 20 (describing different perspectives and reactions to the ATB's inclusive definition of "conservation").
30. *See, e.g.*, *Redefining Conservation for the 21st Century*, W. Landowners All. 3 (Jan. 18, 2021), https://westernlandowners.org/wp-content/uploads/2021/01/2021_Redefining-Conservation-for-the-21st-Century_vF_012021.pdf [https://perma.cc/W2ED-KDXU] (urging the Biden Administration to embrace habitat leases).
31. Kaitlynn Glover, *Conserving America the Beautiful—the Ranching Way*, Pub. Lands Council (July 1, 2021), https://publiclandscouncil.org/2021/07/01/conserving-america-the-beautiful-the-ranching-way/ [https://perma.cc/QQ52-H9XB] ("the 30 by 30 campaign offers a rare opportunity for ranchers to be widely recognized as the conservationists they are").
32. Letter from Am. Sportfishing Ass'n et al. to Debra Haaland, Sec'y, U.S. Dep't Interior et al., Sporting Conservation Cmty. Recommendations 10–11 (Oct. 13, 2021), https://aws.boone-crockett.org/s3fs-public/atoms/files/news_sporting-conservatiocommunity-recommendations.pdf [https://perma.cc/JN7T-GB4H]:
    > [M]any federally owned lands managed across the country by the U.S. Forest Service are actively managed to deliver considerable biodiversity benefits, provide tremendous access opportunities for sportsmen and women, and, when managed properly, contribute to both carbon sequestration and carbon storage efforts while generating a renewable supply of wood-based products.
33. Letter from Bruce Westerman, Member, House Comm. on Nat. Res. et al. to Debra Haaland, Sec'y, U.S. Dep't Interior (Apr. 14, 2021), https://republicans-naturalresources.house.gov/uploadedfiles/2021-04-14_westerman_et_al_to_haaland_doi_re_30_x_30_engagement_session.pdf [https://perma.cc/B29T-E68J] ("Our public lands are unhealthy, overgrown, and in desperate need of management. Tools like active forest management and grazing are vital to ensuring we have healthier, more productive lands.").
34. Letter from Zippy Duvall, President, Am. Farm Bureau Fed'n, to Joseph R. Biden, President of the U.S. (Apr. 22, 2021), https://www.fb.org/files/Public_Lands.30X30_Letter_to_White_House.AFBFLTR.04.22.21.pdf [https://perma.cc/HCU9-B5NL] ("Farmers and ranchers are the original conservationists and have been good stewards of lands, both private and public, for generations . . . America's agriculturalists are asking whether their good work will be recognized by the administration.").
35. Press Release, W. Coast Seafood Processors Ass'n et al., W. Coast Seafood Indus. Eager to Discuss Climate Actions (Jan. 28, 2021), https://www.wcspa.com/wp-content/uploads/2021/03/FINAL_Climate-EO-West-Coast-industry-response.pdf [https://perma.cc/5EYT-SWFE] ("[I]t is critical that the administration fully understand all the sacrifices we have made and the conservation safeguards we helped put in place to protect our oceans.").
36. Jennifer Yachnin, *When It Comes to "30x30," Everything Counts Until It Doesn't*, Greenwire (Sept. 17, 2021, 1:32 PM), https://www.eenews.net/articles/when-it-comes-to-30x30-everything-counts-until-it-doesnt/ [https://perma.cc/K7NC-ZGYK].
37. *Id.*
38. At the time of publication, the most recent official report describing the ATB Initiative was the Year One Report, which was issued in 2021 and did not define the term "conservation" or clarify how it would be measured. *See* ATB, Year One Report, *supra* note 27. Instead, the report identified eight guiding principles and six areas of focus that provided opportunities for successful collaboration on conservation priorities. *Id.* at 6, 18. The report recommended that the Administration develop the American Conservation and Stewardship Atlas, which would collect "baseline information on the amount and types of lands and waters that are being managed for conservation and restoration purposes." *Id.* at 16–17. In January 2022, the Administration issued a request for information on the development of the Conservation Atlas. *See* U.S. Dep't Interior, Request for Information to Inform Interagency Efforts to Develop the American Conservation and Stewardship Atlas, 87 Fed. Reg. 235 (Jan. 4, 2022). Other than posting audio recordings of the Listening Sessions associated with this request, no other information on the development of the Conservation Atlas has been published on the ATB Initiative website. *See America the Beautiful*, U.S. Dep't Interior, https://www.doi.gov/priorities/america-the-beautiful [https://perma.cc/3CYK-TN7G] (last visited Jan. 12, 2023).
39. *See infra* Part VI.

strating compliance with the goals of the Convention on Biological Diversity to verifying a project's efficacy in the voluntary carbon market.[40] These assessment and disclosure practices recognize a wide variety of conservation projects with divergent goals, varying degrees of conservation efficacy, and diverse landownership scenarios.[41] Instead of focusing on a project's label, disclosures shift the focus to a project's management protocols and outcomes.[42]

This Article proposes the adoption of Conservation Project Report Cards that would disclose the goals, management protocols, monitoring results, conservation outcomes, and durability of each project included within the ATB Initiative. This standardized approach would support the goals of the ATB Initiative by embracing a continuum of conservation, while allowing the public to assess the individual quality and efficacy of each project within the continuum. The Article proceeds as follows. Part II explores the background, purpose, and urgency of the 30 x 30 target. Part III describes the ATB Initiative. Part IV explores the benefits and risks of embracing a broad definition of conservation. Part V furthers the discussion by comparing the divergent results of projects that prioritize different elements of the ATB's three purposes. Finally, Part VI briefly discusses existing disclosure methodologies, summarizes their similarities, and proposes a sample Conservation Report Card for discussion. Requiring standardized disclosures from projects included within the ATB Initiative would bring transparency to the continuum of conservation by publishing the goals, management protocols, and outcomes of conservation projects included in the ATB Initiative.

II. Biodiversity Loss, Climate Change, and the 30 x 30 Target

Climate change and biodiversity loss are two impending crises with a short window in which to act.[43] The 30 x 30 target is a proposed remedy for addressing both.[44]

A. *The Intertwined Crises of Climate Change and Biodiversity*

Every year, the World Economic Forum issues a Global Risk Report describing changes occurring in the global risks landscape from year to year.[45] In 2020, for the first time in the publication's history, the top five global risks came from a single category: the environment.[46] Members of the World Economic Forum's multistakeholder community identified "failure of climate change mitigation and adaptation" as the number one risk by impact and number two by likelihood over the next 10 years.[47] "Biodiversity loss" was ranked as the second most impactful and third most likely risk for the next decade.[48]

The threats of climate change have become so familiar that they have moved from scientific documents to nightly news segments.[49] The final sentence of the most recent Intergovernmental Panel on Climate Change ("IPCC") Report emphasized the urgency of responding to this crisis.[50] "The cumulative scientific evidence is unequivocal: Climate change is a threat to human well-being and planetary health. Any delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a livable and sustainable future for all."[51]

The threats of biodiversity loss are less familiar, but no less urgent.[52] Nature loss is happening rapidly.[53] The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services published a study in 2019 concluding that societal effects on land, freshwaters, and oceans have accelerated in the past 50 years and are contributing to species extinction.[54] Human beings have severely altered 75% of the earth's land-based environment and 66% of the marine environment, degrading ecosystem services and accelerating the rate of extinctions.[55] A 2020 study estimated that nearly 30% of all wild plants are threatened with extinction.[56] Another study from the same year

40. *See infra* Part VI(A)–(B).
41. *Id.*
42. *Id.*
43. IPCC, Climate Change 2022, Summary for Policymakers, *supra* note 7, at 14 ("Biodiversity loss and degradation, damages to and transformation of ecosystems are already key risks for every region due to past global warming and will continue to escalate with every increment of global warming (*very high confidence*)."); IUCN World Conservation Congress, Nature 2030: One Nation, One Future: A Programme for the Union 2021-2024 3 (2021), https://portals.iucn.org/library/sites/library/files/documents/WCC-7th-001-En.pdf [https://perma.cc/2SBR-EQ27] ("Our world is in a crisis. Rapid loss of biodiversity and dangerously changing climate are some indicators of this crisis.") [hereinafter Nature 2030].
44. *See, e.g.*, Mari Galloway, *Clearing the Path to 30 x 30*, 45 Environs Env't L. & Pol'y J. 1, 5 (2021)
> Regardless of some variance within the scientific community, nearly all conservationists agree that efforts to stabilize the climate and avoid permanent loss of biodiversity will require a rapid reduction of land conversion, which both provides habitat for native species and sequesters carbon. To that end, conserving at least 30% of lands and coastal waters by 2030, more commonly referred to as "30x30," has been broadly adopted as a tangible goal that can help halt and reverse the current alarming rate of biodiversity loss by strategically conserving lands to provide necessary habitat for species.

[hereinafter Galloway, *Clearing the Path to 30 x 30*]; Laura Bloomer et al., *A Call to Stop Burning Trees in the Name of Climate Mitigation*, 23 Vt. J. Env't L. 93 (2022); *see also infra* Part II(B).
45. *See* Emilio Granados Franco et al., Global Risks Report 2020 (15th ed. 2020), https://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf [https://perma.cc/LH58-XD7V].
46. *Id.* at 7.
47. *Id.*
48. *Id.*
49. *See, e.g.*, *Changing Climate*, 5 Chicago, https://www.nbcchicago.com/news/national-international/changing-climate/ [https://perma.cc/AB3Z-3ERT] (last visited Jan. 12, 2023) (identifying "Changing Climate" as a trending topic and compiling relevant news stories).
50. IPCC, Climate Change 2022, Summary for Policymakers, *supra* note 7, at 33.
51. *Id.*
52. *See* Nature 2030, *supra* note 43, at 3 (providing a summary of recent authoritative scientific reports documenting increasing threats to biodiversity and ecological systems).
53. *Id.* at 11 ("Biodiversity on land is in decline globally, and is vanishing more rapidly than at any other time in human history.").
54. Sandra Diaz et al., Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services 4, 11 (2019), https://zenodo.org/record/3553579#.Y_af23bMI2w [https://perma.cc/RX96-VMKB].
55. *Id.*
56. Alexandre Antonelli et al., State of the World's Plants and Fungi 15 (2020), https://www.kew.org/sites/default/files/2020-09/Kew%20

focusing on vertebrates estimated that monitored populations have declined by an average of 68% in the last five decades.[57] Additionally, an earlier study used a compilation of population monitoring data from around the world and estimated that approximately half of the world's wild animals have been lost over the past 40 years.[58] These trends are visible in daily life. Monarch butterfly populations have declined 90%.[59] Common birds, like the eastern meadowlark and common night-hawk, that were once common and easy to spot have become increasingly scarce.[60] According to the North American Bird Conservation Initiative, common birds are now suffering population losses in the tens of millions.[61] Losing biodiversity contributes to species extinction.[62] Once it occurs, extinction is irreversible.

Like climate change, the loss of nature has economic implications. In 2020, the World Economic Forum issued a special report exploring the relationship between nature loss and business risk.[63] The report concluded that nature loss is a wide-ranging problem, driven by economic activities, with significant financial consequences if it is not addressed. "More than half of the world's total gross domestic product is moderately or highly dependent on nature and its services" and is therefore exposed to risk by nature loss.[64]

Many of the drivers of biodiversity loss are also drivers of climate change.[65] According to the latest report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services ("IPBES"), five direct drivers have accounted for more than 90% of nature loss in the past 50 years.[66] These drivers are land- and sea-use change, natural resource exploitation, pollution, and invasive alien species.[67] In a cascading cycle of negative reactions, many of these drivers exacerbate climate change, and climate change further accelerates species loss.[68]

B. *The 30 x 30 Target*

Analyzing these trends, an acclaimed study by Eric Dinerstein et al., observed that "opportunities to address both climate change and the extinction crisis are time bound."[69] Climate models show an impending tipping point. "If current trends in habitat conversion and emissions do not peak by 2030, then it will become impossible to remain below 1.5°C."[70] Similarly, if land conversion rates, poaching, and other biodiversity threats are not slowed or halted in the next 10 years, multiple species and ecosystem will reach "points of no return."[71] The study proposed "a companion pact to the Paris Agreement," which it called the "Global Deal for Nature."[72] It recommended three guiding themes: "(1) protecting biodiversity; (2) mitigating climate change; and (3) reducing threats to ecosystem intactness and persistence of species."[73] The study endorsed the "30 x 30" target as a milestone toward the larger end goal of protecting half the planet by 2050.[74]

At the beginning of 2021, more than 50 nations had endorsed the "30 x 30" target through the High Ambition Coalition for Nature and People.[75] As of June 30, 2022, that number had grown to over 100, which is more than half of the world's countries.[76] In a sign of increasingly

State%20of%20the%20Worlds%20Plants%20and%20Fungi.pdf [https://perma.cc/DT7M-DT8R].

57. Inger Andersen et al., Living Planet Report 2020: Bending the Curve of Biodiversity Loss 4 (2020), https://membership.zsl.org/sites/default/files/LPR%202020%20Full%20report.pdf [https://perma.cc/L82U-SZBU].
58. Bruce A. Stein et al., Reversing America's Wildlife Crisis: Securing the Future of Our Fish and Wildlife 3 (2018), https://www.nwf.org/-/media/Documents/PDFs/NWF-Reports/2018/Reversing-Americas-Wildlife-Crisis_2018.ashx [https://perma.cc/CT3R-QYCK].
59. *Id.*
60. *Id.*
61. *See* N. Am. Bird Conservation Inst., State of the Birds 2019 2 (2019), https://www.stateofthebirds.org/2019/wp-content/uploads/2019/09/2019-State-of-the-Birds.pdf [https://perma.cc/8QDD-FBXQ]; *see also* Kenneth V. Rosenberg et al., *Decline of the North American Avifauna*, 366 Science 120 (2019) (estimating a 29% reduction in population of birds since 1979 resulting in a cumulative loss of billions of breeding individuals across a wide range of species and habitats).
62. Biodiversity has many dimensions including genetic diversity, species diversity, and ecosystem diversity—degrading the quality of any of these dimensions contributes to species loss and ultimately species extinctions. *See, e.g.*, Pedro Juareguiberry et al., *The Direct Drivers of Recent Global Anthropogenic Biodiversity Loss*, 8 Sci. Advances, at 1 (2022) (providing a statistical synthesis of empirical comparisons of the drivers of species loss, finding that the dominant driver varies among types of biodiversity indicators, and concluding that policies should tackle the major drivers and their interactions, not just some in isolation); Diaz et al., *supra* note 54, at 4 (describing ways in which degrading a dimension of biodiversity contributes to species loss and accelerates extinction).
63. *See* Celine Herweijer et al., Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy (2020), https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf [https://perma.cc/Q3RS-MZ3K].
64. *Id.* at 8.
65. IPCC, Climate Change 2022, Summary for Policymakers, *supra* note 7, at 12 ("Future vulnerability of ecosystems to climate change will be strongly influenced by the past, present and future development of human society, including from overall unsustainable consumption and production, and increasing demographic pressures, as well as persistent unsustainable use and management of land, ocean, and water."); *see also* Diaz et al., *supra* note 54, at 5 (describing climate change as a direct driver of species loss that is exacerbating the impact of other drivers).
66. *Id.*
67. *Id.* (describing the five direct drivers of change in nature and acknowledging that these are also affected by indirect drivers including population, economy, global trade, and energy demands).
68. For a thoughtful discussion of these intertwined issues, see Daniel A. Farber, *Separated at Birth? Addressing the Twin Crises of Biodiversity and Climate Change*, 42 Ecology L.Q. 841 (2015); *see also* Diaz et al., *supra* note 54, at 5 ("Climate change is a direct driver that is increasingly exacerbating the impact of other drivers on nature and human well-being."); Juareguiberry et al., *supra* note 62, at 4 (noting that "climate change is probably the most rapidly intensifying threat to biodiversity" even though other threats currently do more damage).
69. Eric Dinerstein et al., *A Global Deal for Nature: Guiding Principles, Milestones, and Targets*, 5 Sci. Advances, at 1 (2019) [hereinafter Dinerstein et al., *A Global Deal for Nature*].
70. *Id.*
71. *Id.*
72. *Id.* at 1.
73. *Id.* at 4.
74. *Id.*; *see also* Eric Dinerstein et al., *"Global Safety Net" to Reverse Biodiversity Loss and Stabilize Earth's Climate*, 6 Sci. Advances, at 1 (2020); Jonathan Baillie & Ya-Ping Zhang, *Space for Nature*, 361 Science 1051 (2018).
75. Patrick Greenfield & Fiona Harvey, *More Than 50 Countries Commit to Protection of 30% of Earth's Land and Oceans*, The Guardian (Jan. 11, 2021, 12:44 PM), https://www.theguardian.com/environment/2021/jan/11/50-countries-commit-to-protection-of-30-of-earths-land-and-oceans [https://perma.cc/5FMW-ST3Z].
76. *More Than 100 Countries Now Formally Support the Global Target to Protect at Least 30% of the Planet's Land and Ocean by 2030*, High Ambition Coal. (June 30, 2022), https://www.hacfornatureandpeople.org/more-than-100-countries-now-formally-support-the-global-target-to-protect-at-least-30-of-the-planet-by-2030 [https://perma.cc/MDZ3-RFPH].

wide-spread acceptance, the target was included in early drafts of the Post-2020 Global Biodiversity Framework for the United Nations Convention on Biological Diversity.[77] Finally, in December 2022, at the 15th Conference of Parties to the UN Convention on Biological Diversity, participating nations adopted the Kunming-Montreal Global Biodiversity Framework, which included the 30 x 30 target.[78]

Amidst the growing popularity of 30 x 30, it is important to remember that the thirty percent conservation target is a rallying cry, not a recipe. As Dinerstein's team observed, "These global milestones and targets are useful: They are easy to comprehend and help simplify policy and communications strategies," but there are risks to such simplicity.[79]

First, the tagline has a shelf life.[80] If the rate of species loss exceeds the pace of conservation, the 30% target will lose its utility. Once a species is extinct, it cannot return, no matter how much land is conserved. Similarly, if the 30% target is met without keeping climate change below 1.5° Celsius ("C") of warming, species will succumb to the myriad threats posed by a warming climate and biodiversity loss will continue.[81] Scientific studies project that beyond 1.5°C of warming, ecosystems will begin to unravel.[82]

Second, to effectively protect carbon sinks and avoid species loss, the 30% target must be achieved with the right landscapes.[83] As Dinerstein's team warned, there are several reasons that governments must guard against the temptation to protect low-conflict areas that may be lower-priority from a biodiversity perspective.[84] First, with respect to climate change, not all landscapes have equal capacity as carbon sinks.[85] To effectively contribute to climate change mitigation, ecosystems that serve as carbon sinks must be prioritized for conservation. Second, when it comes to species preservation, location matters. Expanding protected areas will only stop biodiversity loss if the threatened species live in the protected areas. Compounding this problem, those protected areas must have sufficient connectivity to allow species to move, mate, and mature.[86] Acreage alone will not guarantee biodiversity protection.[87]

The difficulty of ensuring that the right types of land receive protection is demonstrated by the history of the United Nations Framework Convention on Biological Diversity ("Convention on Biological Diversity"). The Convention on Biological Diversity was adopted on May 22, 1992, and entered into force on December 29, 1993.[88] Since its inception, the number of signatories grew from 168 to 196.[89] The United States is the only country that has signed the Convention without ratifying or otherwise approving it.[90] The Convention has three objectives: (1) the conservation of biological diversity; (2) the sustainable use of its components; and (3) the fair and equitable sharing of the benefits arising from the use of biological and genetic resources.[91] At the 10th Conference of the Parties ("COP10") held in Nagoya, Japan, from October 18-29, 2010, negotiations produced 47 decisions, known as the Nagoya Outcomes, including a new Strategic Plan for Biodiversity and the Aichi Biodiversity Targets.[92] There are 20 Aichi Targets organized under five strategic goals all directed toward stemming the loss of biodiversity.[93] Aichi Target 11 was a less ambitious version of the 30 x 30 target. It aspired to conserve at least 17% of terrestrial and inland water and 10% of coastal and marine areas by 2020.[94] Conservation was to be achieved through "systems of protected areas" and "other effective area-based conservation measures," which came to be referred to as OECMs.[95]

77. *Update of the Zero Draft of the Post-2020 Global Biodiversity Framework*, United Nations Convention on Biological Diversity 5 (Aug. 17, 2020), https://www.cbd.int/doc/c/3064/749a/0f65ac7f9def86707f4eaefa/post2020-prep-02-01-en.pdf [https://perma.cc/7MUM-T5JV]; Sara Schonhardt, *30 by 30 Worldwide, From Cambodia to Africa*, ClimateWire (May 20, 2021), https://subscriber.politicopro.com/article/eenews/1063733049.
78. Press Release, Convention on Biological Diversity, Nations Adopt Four Goals, 23 Targets for 2030 in Landmark UN Biodiversity Agreement (Dec. 19, 2022), https://www.un.org/sustainabledevelopment/blog/2022/12/press-release-nations-adopt-four-goals-23-targets-for-2030-in-landmark-un-biodiversity-agreement/ [https://perma.cc/78RH-M435].
79. Dinerstein et al., *A Global Deal for Nature*, *supra* note 69, at 4.
80. *Id.* at 1 ("Opportunities to address both climate change and the extinction crisis are time bound.").
81. *Id.* at 4.
82. *See* Global Warming of 1.5°C, Intergovernmental Panel on Climate Change 5, 10 (2018), https://www.ipcc.ch/sr15/ [https://perma.cc/3AGM-QVN3]; Thomas E. Lovejoy & Lee Hannah, *Avoiding the Climate Failsafe Point*, 4 Sci. Advances, at 1 (2018).
83. Dinerstein et al., *A Global Deal for Nature*, *supra* note 69, at 4.
84. *Id.*
85. *See generally* Zongyao Sha et al., *The Global Carbon Sink Potential of Terrestrial Vegetation Can Be Increased Substantially by Optimal Land Management*, 3 Commc'ns Earth & Env't (2022).
86. Robert B. Keiter, *Toward a National Conservation Network Act: Transforming Landscape Conservation on the Public Lands Into Law*, 42 Harv. Env't L. Rev. 61, 89–90 (2018) [hereinafter Keiter, *Toward a National Conservation Network Act*].
87. Dinerstein et al., *A Global Deal for Nature*, *supra* note 69, at 4 (warning that biologists and planners should avoid the temptation of "adding more land to reach the global target that is similar to what is already well accounted for at the expense of underrepresented habitats and species").
88. William J. Snape III, *Joining the Convention on Biological Diversity: A Legal and Scientific Overview of Why the United States Must Wake Up*, 10 Sustainable Dev. L. & Pol'y 6, 8 (2010).
89. *Chapter XXVII, 8 Convention on Biological Diversity*, United Nations Treaty Collection, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-8&chapter=27&clang=_en#1 [https://perma.cc/V839-4P24] (last visited Sept. 29, 2022).
90. *Id.* (listing date of ratification, accession, acceptance, approval, or succession by each country, and showing that, to date, the United States is the only country that has not taken any of these actions).
91. Convention on Biological Diversity, art. 1, *opened for signature* June 5, 1992, 31 I.L.M. 818.
92. Maria Jose Ortiz, *Aichi Biodiversity Targets on Direct and Indirect Drivers of Biodiversity Loss*, 13 Env't L. Rev. 100, 100 (2011).
93. *See id.* at 101–05 (discussing the first two strategic goals and their targets).
94. *Aichi Target 11*, Convention on Biological Diversity, https://www.cbd.int/aichi-targets/target/11 [https://perma.cc/2CXF-DSWX] (last visited Jan. 12, 2023):
    > By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.
95. *Id.*; Heather C. Bingham et al., Protected Planet Report 2020: Tracking Progress Towards Global Targets for Protected and Conserved Areas (2021), https://research.aston.ac.uk/en/publications/protected-planet-report-2020-tracking-progress-towards-global-tar [https://perma.cc/8GGY-F7ZE] (providing the final report on the status of Aichi Biodiversity Target 11, and noting that OECMs were not recorded until 2019,

The final report analyzing progress toward this target concluded that even though the international community had made major progress toward the global target on protected and conserved area coverage, the quality of the protected area network needed to improve.[96] Although the overall percentage of conserved landscapes met the target of 17%, many of the landscapes necessary to protect biodiversity were left unprotected.[97] Specifically, 34% of terrestrial and key biodiversity areas lacked protection.[98] Additionally, management effectiveness determines the degree of protection afforded by protected areas and OECMs, but only a small percentage have been assessed and it is likely that many do not meet the standards for full effectiveness.[99]

Feasibility also poses a challenge. It is not feasible to meet the 30 x 30 target through protective designations that prohibit human use—like a national park—without inequitably displacing communities that live or rely upon natural resources within the protected area.[100] As the International Union for Conservation of Nature ("IUCN") recognized, "globally, nearly half the human population is directly dependent on natural resources for their livelihood, and many of the most vulnerable people depend directly on biodiversity to meet their daily subsistence needs."[101] New land use restrictions that deprive people of their homes, property, or livelihoods may often be unjust.[102] This concept applies equally across the spectrum of development. It is as true for subsistence farmers in the rainforest as it is for farming or logging operations on private land.[103] Conservation measures must be implemented against a vast and complex legal structure of property rights and entitlements.[104] Adding to the complexity, many areas of biological diversity are either managed or claimed by Indigenous people.[105] For this reason, the Convention on Biological Diversity recognized that governance arrangements for protected areas and OECMs must be "tailored to their specific context, socially inclusive, respectful of rights, and effective in delivering conservation and livelihood outcomes."[106]

Practical and political reality is one reason that the Convention on Biological Diversity added OECMs as a tool for achieving the Aichi Target 11 in addition to more traditional "protected areas."[107] OECMs were officially defined in 2018 as "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term conservation outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values."[108] OECMs provide a pathway to achieving ecological connectivity, which is critical to achieving biodiversity conservation and climate resilience because most Protected Areas do not contain sufficient habitat to sustain viable populations of fish and wildlife species within the park.[109] OECMs may be managed by governments, private individuals, organizations, or Indigenous groups.[110] Rather than being defined by a specific designation, such as park or wildlife refuge, they are defined by the location's ecological potential, management characteristics, and conservation outcomes.[111] In other words, Protected Areas are defined by the primary management objectives, such as conservation, while OECMs are defined by conservation outcomes in circumstances that are less restrictive than traditional Protected Areas.[112] Examples include government-run water catchment areas, territories conserved by Indigenous peoples and local communities,

and at the time of publication were only limited to five countries, but they contribute significantly to coverage and connectivity).

96. Press Release, Int'l Union for Conservation of Nature, World Met Target for Protected Area Coverage on Land, but Quality Must Improve (May 19, 2021), https://www.iucn.org/news/protected-areas/202105/world-met-target-protected-area-coverage-land-quality-must-improve [https://perma.cc/VTM6-GD36].
97. *Id.*
98. Bingham et al., *supra* note 95.
99. *Id.*
100. David Takacs pithily summarized this perspective, "'[P]ut a fence around it and protect it' conservation leads to human dislocations, political upheaval, and general human misery." David Takacs, *Aggressive Solutions to Disrupt Biodiversity Loss*, *in* Environmental Law. Disrupted. 10038, 10042 (Jessica Owley & Keith Hirokawa eds., 2019) (citing Bram Büscher et al., *Half-Earth or Whole Earth? Radical Ideas for Conservation, and Their Implications*, 51 Oryx 407 (2017)).
101. Nature 2030, *supra* note 43, at 4.
102. For one of many examples of unjust treatment in the name of conservation, see Judith Kimerling's description of how the Huaorani people, who live in a portion of Ecuador's Amazon Rainforest, were treated in a meeting purportedly devoted to developing a management plan for the Yasuni National Park that overlays their ancestral territory. *See* Judith Kimerling, *Oil, Contact, and Conservation in the Amazon: Indigenous Huaorani, Chevron, and Yasuni*, 24 Colo. J. Int'l Env't L. & Pol'y 43, 98–113 (2013). For an exploration of the intersection between social justice and conservation, see generally John A. Vucetich et al., *Just Conservation: What Is It and Should We Pursue It?*, 221 Biological Conservation 23 (2018).
103. *Id.* at 24 (posing theoretical generic circumstances where the values of social justice and conservation may conflict).
104. Sandra Zellmer demonstrates some of this complexity in her analysis of how to protect freshwater systems, noting that institutional fragmentation and jurisdictional barriers to holistic watershed management exist horizontally—between agencies—and vertically—among federal, tribal, state, and local authorities. *See generally* Sandra B. Zellmer, *Charting a Course to Conserve 30% of Freshwaters by 2030*, 64 Wm. & Mary L. Rev. 169 (Oct. 2022).
105. *See* Stephen T. Garnett et al., *A Spatial Overview of the Global Importance of Indigenous Lands for Conservation*, 1 Nature Sustainability 369, 370 (2018) (concluding that "although Indigenous Peoples' represent <5% of the global population, they currently manage or have rights over many of the world's most sparsely populated, intact places").
106. Convention on Biological Diversity, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity, 5 UNEP (Nov. 30, 2018), CBD/COP/DEC/14/8 [hereinafter UNEP Convention on Biological Diversity].
107. A "protected area" is "a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives." Convention on Biological Diversity, art. 2, *opened for signature* June 5, 1992, 1760 U.N.T.S. 79, 31 I.L.M. 818.
108. UNEP Convention on Biological Diversity, *supra* note 106, at 1, 13.
109. Keiter, *Toward a National Conservation Network Act*, *supra* note 86, at 90–91.
110. UNEP Convention on Biological Diversity, *supra* note 106, at 6, Annex II, (1)(A)(4).
111. *See generally id.* at 10–14, Annex III; *see also* Int'l Union for Conservation of Nature, Recognising and Reporting Other Effective Area-Based Conservation Measures v (2019), https://portals.iucn.org/library/sites/library/files/documents/PATRS-003-En.pdf [https://perma.cc/392M-W5E2] ("OECMs may be managed for many different objectives but they *must* deliver effective conservation.") [hereinafter IUCN, Recognizing and Reporting Area-Based Conservation Measures].
112. *See* Paul F. Donald et al., *The Prevalence, Characteristics and Effectiveness of Aichi Target 11's "Other Effective Area-Based Conservation Measures" (OECMs) in Key Biodiversity Areas*, 12 Conservation Letters, at 2 (2019); Sean L. Maxwell et al., *Area-Based Conservation in the Twenty-First Century*, 586 Nature 217, 217–18 (2020).

and private conservation initiatives.[113] By recognizing and rewarding active management and stewardship that protects biodiversity, OECMs provide a flexible solution to the feasibility problem.[114] However, that flexibility can also be abused.[115] OECMs may help meet the 30% target, but whether they assist in preserving biodiversity depends on the quality of management.[116]

In summary, though 30 x 30 is a catchy phrase, it is not a cure-all. Haphazardly compiling acreage and labeling it conservation will not achieve the underlying purposes of the 30 x 30 target. Preserving biodiversity and slowing climate change requires a diverse portfolio of specific land, water, and marine environments that are effectively managed.[117] Beneath the simplicity of the 30 x 30 target lies a challenge: Can the world conserve the right landscapes in time to effectively halt biodiversity loss and slow climate change? Without progress on these underlying challenges, the 30 x 30 target is an empty slogan.

III. The America the Beautiful Initiative

Shortly after taking office, the Biden Administration issued Executive Order No. 14008, *Tackling the Climate Crisis at Home and Abroad* ("EO 14008").[118] Section 216 of EO 14008 instructed the Secretary of the Interior, in consultation with the Secretary of Agriculture, the Secretary of Commerce, the Chair of the Council on Environmental Quality, and other relevant agencies, to submit a report within 90 days recommending steps that the United States should take to achieve the goal of conserving at least 30% of our lands and waters by 2030.[119] Within this report, the agencies were instructed to "propose guidelines for determining whether lands and waters qualify for conservation" and to "establish mechanisms to measure progress toward the 30-percent goal."[120] Subsequent to the first 90-day report, the Secretary of the Interior was instructed to submit annual reports monitoring progress.[121]

The 90-day report, entitled *Conserving and Restoring America the Beautiful* was issued on May 6, 2021.[122] The report's introduction identified three problems threatening the land, waters, and wildlife of the United States: (1) the disappearance of nature; (2) climate change; and (3) inequitable access to nature.[123] To address these challenges, the report recommended developing and pursuing a "locally led, nationally scaled effort to conserve, connect, and restore the lands, waters, and wildlife upon which we all depend."[124] Characterizing the 30% target as "the first-ever national goal for the stewardship of nature in America," the report distinguished between "the notion of 'conservation'" and the "related but different concept[s] of 'protection' or 'preservation.'"[125] The report emphasized that the 30% goal "reflects the need to support conservation and restoration efforts across all lands and waters, not solely on public lands, including by incentivizing voluntary stewardship on private lands and by supporting the efforts and visions of States and Tribal Nations."[126]

The report identified eight key principles, developed during consultation sessions with stakeholders, that would guide the Initiative.[127] Those key principles are:

(1) Pursue a collaborative and inclusive approach to conservation;
(2) Conserve America's lands and waters for the benefit of all people;
(3) Support locally led and locally designed conservation efforts;
(4) Honor Tribal sovereignty and support the priorities of Tribal Nations;
(5) Pursue conservation and restoration approaches that create jobs and support healthy communities;
(6) Honor private property rights and support the voluntary stewardship efforts of private landowners and fishers;
(7) Use science as a guide;
(8) Build on existing tools and strategies with an emphasis on flexibility and adaptive approaches.[128]

113. Maxwell et al., *supra* note 112, at 217–18 (listing these examples and providing specific location-based examples of each); Keiter, *Toward a National Conservation Network Act*, *supra* note 86, at 85–86 (reporting that in the United States, land trusts have acquired more than 56 million acres for nature conservation and open space preservation).
114. *See, e.g.*, Georgia G. Gurney et al., Comment, *Biodiversity Needs Every Tool in the Box: Use OECMs*, 595 Nature 646 (2021) (urging the conservation community of policymakers, scientists, practitioners, and donors to study and use OECMs more, alongside Protected Areas because "this policy tool can advance equitable and effective conservation if CBD parties stay true to the convention's intent to sustain biodiversity rather than 'achieve' area-based targets").
115. *Id.* at 648 (describing key concerns about the misuse of OECM recognition and proposing steps to address these abuses, including the development of a metric to demonstrate management outcomes).
116. *Id.*; *see also* Donald et al., *supra* note 112, at 7 (reaffirming the importance of tracking the effectiveness of different forms of governance and management at important sites for biodiversity through remote sensing and in situ monitoring to confirm that the conservation designation actually achieves conservation outcomes).
117. *See* Keiter, *Toward a National Conservation Network Act*, *supra* note 82, at 91 (noting the breadth of scientific research using sophisticated computer modeling to graphically demonstrate the location of ecological gaps or shortcomings and places where connectivity could be improved).
118. Exec. Order No. 14008, *Tackling Climate Change at Home and Abroad*, 86 Fed. Reg. 7619 (Jan. 27, 2021).
119. *Id.* at 7627.
120. *Id.*
121. *Id.*
122. ATB, 90-Day Report, *supra* note 23.
123. *Id.* at 9.
124. *Id.*
125. *Id.* For a brief discussion of the historic tension between the terms "conservation" and "preservation," see Jessica Owley & Jess Phelps, *Federal Land Conservation in Rural Areas*, 86 Brook. L. Rev. 839, 843 (2021) [hereinafter Owley & Phelps, *Federal Land Conservation in Rural Areas*].
126. ATB, 90-Day Report, *supra* note 23, at 9.
127. *Id.* at 13–16.
128. *Id.*; *Zellmer*, *supra* note 101, at 178 (observing that "half of the six focus areas flagged by America the Beautiful are aimed at expanding outdoor access and creating jobs," while "only one of the focus areas prioritizes the protection of large intact areas by proclaiming the intent to expand collaborative conservation of fish and wildlife habitats and corridors").

Looking forward, the report recommended six priority areas for early focus and progress:

(1) Create more parks and safe outdoor opportunities in nature-deprived communities;
(2) Support Tribally led conservation and restoration priorities;
(3) Expand collaborative conservation of fish and wildlife habitats and corridors;
(4) Increase access for outdoor recreation;
(5) Incentivize and reward voluntary conservation efforts of fishers, ranchers, farmers, and forest owners;
(6) Create jobs by investing in restoration and resilience.[129]

With respect to the task of establishing mechanisms to measure progress toward the 30% goal, the 90-day report deftly side-stepped the question. "There is no single metric—including a percentage target—that could fully measure progress toward the fulfillment of [the Initiative's] interrelated goals."[130] Instead, the report recommended two complementary steps: (1) the creation of an American Conservation and Stewardship Atlas that collects baseline information on the amount and types of lands and waters that are being managed for conservation and restoration purposes; and (2) annual updates on the health of nature in America and on the Federal Government's efforts to support locally led conservation and restoration efforts.[131] Notably, this recommendation did not address the outstanding question of what "conservation" would actually mean. Thus, despite the explicit directive in EO 14008, the report did not "propose guidelines for determining whether lands and waters qualify for conservation," nor did it "establish mechanisms to measure progress toward the 30-percent goal."[132]

Seven months later, in December 2021, DOI issued the Year One Report for America the Beautiful ("Year One Report").[133] The Year One Report highlighted progress made on each of the six areas of focus by listing projects that were funded, completed, or initiated in each area.[134] The report reads like a mishmash of accomplishments cobbled together by an office team determined to make the status quo look innovative.

Four themes emerge from the Year One Report. First, most of the highlighted projects were distinct and disassociated locally led efforts on nonfederal land, often in areas that are not traditionally associated with the word "conservation."[135] For example, the report emphasized progress on urban restoration projects that restore degraded riverfronts, such as the construction of a pedestrian bridge in New York that connected 30,000 low-income Bronx residents to the river and greenspace.[136] Another project, initiated by the U.S. Department of Defense ("DOD"), advanced work to address environmental impacts to Tribal lands from past military activities.[137] The report also emphasized expanded funding for the Outdoor Recreation Legacy Partnership to "create new outdoor recreation spaces, reinvigorate existing parks, and form connections between people and the outdoors in economically underserved communities."[138] While these projects appear to address the problem of inequitable access to nature,[139] other programs have more questionable environmental benefits. Several programs focused on "increasing access for outdoor recreation."[140] These included tourism funding, main street revitalization projects, expansion of trail networks, and expanded hunting and fishing access.[141] The conservation benefits of these projects are not readily apparent, especially because recreational activities in sensitive areas can degrade biodiversity outcomes.[142]

The second theme is that instead of serving as a standalone effort, the ATB Initiative will take credit for a wide range of existing and ongoing efforts.[143] For example, the report emphasized the expansion of the Conservation Reserve Program, which is a program that was first introduced in 1985 by President Ronald Reagan.[144] The program makes annual rent payments to farmers in exchange for taking highly erodible or environmentally sensitive cropland out of production for 10 years or more.[145] Similarly, the report described expansion of the Sentinel Landscapes Partnership, which was founded in 2013 by DOD and works with private landowners around military installations to carry out sustainable management practices on their farms, ranches, and forests to protect against development that could negatively impact defense activities.[146] The report also emphasized elements of the 2021 Bipartisan Infrastructure Law funding restoration and resilience projects across the country.[147] Examples ranged from plugging orphaned wells, restoring abandoned mines, upgrading

129. *Id.* at 18–21.
130. *Id.* at 16.
131. *Id.* at 16–17.
132. Exec. Order No. 14008, *Tackling Climate Change at Home and Abroad*, 86 Fed. Reg. 7619, 7627 (Jan. 27, 2021).
133. ATB, Year One Report, *supra* note 27.
134. *See id.* at 6–24.
135. *Id.* (listing projects).
136. *Id.* at 8–9.
137. *Id.* at 13.
138. *Id.* at 8.
139. ATB, 90-Day Report, *supra* note 23, at 9.
140. ATB, Year One Report, *supra* note 27 at, 17–18.
141. *Id.*
142. *See* Zellmer, *supra* note 104, at 178 ("increased human access can significantly impact wildlife and its habitat"); Robert B. Keiter, *The Emerging Law of Outdoor Recreation on the Public Lands*, 51 Env't L. 89, 90–91, 103–10 (2021) (describing conflicts between recreational uses and conservation goals).
143. ATB, Year One Report, *supra* note 27, at 6–24 (listing existing and ongoing projects brought under the umbrella of the ATB Initiative).
144. Tadlok Cowan, Cong. Rsch. Serv., RS21613, Conservation Reserve Program: Status and Current Issues 1 (Sept. 2010) (describing the initiation of the program in 1985 and its development through 2014).
145. *Conservation Reserve Program*, U.S. Dep't Agric. Farm Serv. Agency, https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index [https://perma.cc/D23G-6LEZ] (last visited Jan. 12, 2023) (describing the program, which makes annual rental payments to farmers based on the agricultural or ecological value of the land, and provides cost-share assistance for approved conservation practices).
146. ATB, Year One Report, *supra* note 27, at 21; The Sentinel Landscapes Partnership, https://sentinellandscapes.org/ [https://perma.cc/MM2V-4T7B] (last visited Jan. 12, 2023).
147. ATB, 90-Day Report, *supra* note 23, at 21.

highway systems to incorporate wildlife crossings, investing in watershed rehabilitation and flood prevention, to improving coastal resilience.[148]

The third theme is that the ATB Initiative mirrors some of the aspirations and strategies of the Convention on Biological Diversity, even though it uses different language.[149] First, it adopts the 30 x 30 target, which was anticipated to be—and became—a cornerstone of the Post-2020 Global Biodiversity Framework for the United Nations Convention on Biological Diversity.[150] Additionally, the concept of a "continuum of conservation" is very similar to the recognition of OECMs in addition to more traditional protected areas.[151] Like OECMs, the continuum of conservation includes land managed by governments, private individuals, organizations, and Indigenous groups.[152] Unlike OECMs, which have a specific definition and an identified metric to verify the achievement of conservation outcomes,[153] no metric has been established to verify conservation outcomes within the ATB Initiative.

The fourth theme is that there is a lot of work left to do. Despite painting a rosy picture of success, the Year One Report also summarized the existing scientific data regarding natural systems in the United States including recent conditions, trends, and threats.[154] With respect to land use and land cover, the lower-48 states have seen an increase in developed land cover by 30% since the mid-1980s.[155] In the last 20 years, developed land cover has increased by 15,445 square miles, with associated impervious surfaces adding an additional 8,800 square miles and 580 square miles converted into developed lands for wind turbines, oil pads, or natural gas pads.[156] Lands converted to irrigated croplands have increased 7% in the last two decades.[157] Meanwhile, 18% of forest cover has been burned, harvested, or otherwise disturbed.[158] Additionally, 10% of the country's coastal regions have experienced a net change in land cover.[159] Developed land increased by 37%, displacing agriculture, forest, and wetlands.[160] Climate change is also affecting landscapes nationwide, with drought likely to become even more frequent, severe, and longer-lasting.[161] By December 2021, more than 93% of the western United States was experiencing moderate to exceptional drought conditions.[162] Disturbance regimes, like wildfire and invasive species, showed an accelerating trend.[163] Predictably, these trends in land use, land cover, and climate change contributed to a dramatic loss in biodiversity. Roughly one-third of plant and animal species in the United States are at risk for extinction.[164] Between 2005 and 2015, the number of species identified by states and territories in greatest conservation need increased by almost 10%—from 12,351 species to 13,544 species.[165] As the report's granularity increased so did the alarming numbers. As a result of habitat loss and degradation, "[n]early three billion birds—one out of four—have disappeared from the United States and Canada since 1970."[166] Turning to mammals, 14.5% are considered to be threatened due to habitat loss.[167] Fish fare even worse, with 39% of freshwater fish imperiled.[168] Populations of migratory fish have fallen by 76% since 1970.[169] In the Columbia River Basin of the Pacific Northwest, contemporary wild salmon returns are achieving less than 1% of historic potential.[170] The statistics for amphibians, reptiles, insect pollinators, coral reef ecosystems, and kelp forests show similar trends of significant decline.[171] Clearly, there is a lot of work to do. Embracing the status quo and characterizing it as "conservation" will not reverse these trends.

In January 2022, the White House kicked off the development of the American Conservation and Stewardship Atlas, which is intended to collect baseline information on the amount and type of lands and waters being managed for conservation and restoration purposes in the United States.[172] The Request for Information sought input on the fundamental ambiguity plaguing the ATB Initiative, what constitutes "conservation," and how it should be measured.[173] Since the close of comments on March 7, 2022,[174] there has been no additional news from the Administration about the Atlas or when it will be released.[175]

Almost 20% of the allotted time for achieving the goals of the ATB has slipped through the hourglass, but it is still easier to identify questions than progress. The questions swirling around the ATB Initiative are best summarized by the two issues identified in EO 14008 that have not yet been addressed: (1) what are the guidelines for determin-

148. *Id.*
149. Even though it is not a formal signatory, this is not the first time that the United States has adhered to the practices of the Convention on Biological Diversity. For an excellent analysis of past practices, see Snape, *supra* note 89, at 6.
150. *See* Nature 2030, *supra* note 43, at 2; Dinerstein et al., *A Global Deal for Nature*, *supra* note 69 and related text.
151. *See* Nature 2030, *supra* note 43, at 4; IUCN, Recognizing and Reporting Area-Based Conservation Measures, *supra* note 107 and associated text (discussing OECMs).
152. UNEP Convention on Biological Diversity, *supra* note 102, at 6; ATB, 90-Day Report, *supra* note 23, at 16.
153. IUCN, Recognising and Reporting Area-Based Conservation Measures, *supra* note 112, at v.
154. ATB, Year One Report, *supra* note 27, at 28.
155. *Id.* at 29.
156. *Id.*
157. *Id.* at 30.
158. *Id.*
159. *Id.* at 32.
160. *Id.*
161. *Id.* at 31.
162. *Id.*
163. *Id.* at 32.
164. *Id.* at 33 (reporting that 1,268 species are currently listed as endangered and 394 are listed as threatened under the Endangered Species Act).
165. *Id.*
166. *Id.*
167. *Id.* at 34.
168. *Id.*
169. *Id.*
170. *Id.* at 35.
171. *Id.* at 35–37.
172. U.S. Dep't Interior, Request for Information to Inform Interagency Efforts to Develop the American Conservation and Stewardship Atlas, 87 Fed. Reg. 235 (Jan. 4, 2022).
173. *Id.* at 236 ("What stewardship actions should be considered, in addition to permanent protections, to capture a more complete picture of conservation and restoration in America? . . . How can the Atlas best reflect land and water contributions to biodiversity, climate change mitigation and resilience, and equitable access to nature and its benefits?").
174. *Id.* at 235.
175. *See America the Beautiful*, *supra* note 38 (describing the available information released by the Administration).

ing whether lands and waters qualify for conservation, and (2) what are the mechanisms to measure progress toward the 30% goal?[176] The answers to these questions must be resolved soon if the ATB Initiative is going to fulfill its promise. The ATB Initiative has the potential to develop into an innovative paradigm shift and a new way of stewarding natural resources.[177] But without clear answers to these questions, it could collapse under the weight of its breadth and ambiguity.

IV. Benefits and Risks of Embracing a Continuum of Conservation

There are good reasons to expand the definition of conservation beyond its traditional focus on designation of protected landscapes. First, expanding traditional forms of conservation, like GAP Status 1 & 2 lands[178] may not achieve biodiversity preservation. Large-scale land preservation efforts have traditionally focused on the western United States and Alaska, where there are remote, sparsely inhabited landscapes and less commercial agriculture.[179] However, to improve biodiversity outcomes, conservation efforts must be strategically located instead of targeting locations that minimize conflict with agriculturally suitable lands.[180] For example, in the United States, the southeast has more biodiversity, but only a few federally protected landscapes.[181] Achieving the 30% target by expanding protective designations on federal land in the West will not slow biodiversity loss in the southeast, where the greatest diversity of endemic species live. Recent estimates suggest that one-third of terrestrial species in the United States are threatened with extinction, but only 11% have adequate representation within existing protected areas.[182] This means that the traditional approach to conservation would likely leave 22% of threatened species unprotected. An innovative study in southern Canada demonstrated this point.[183] After analyzing 77 ecoregions across southern Canada for biodiversity, threat, and conservation response, the authors identified nine "crisis ecoregions."[184] Although these regions represent less than 5% of Canadian lands, they provide habitat for over 60% of Canada's species at risk.[185] All of the "crisis ecoregions" are located in Canada's settled landscapes, where 70% of people live.[186] Expanding the boundaries of remote parks would not protect these species; but finding effective conservation measures that can be implemented within settled landscapes in cooperation with private landowners might.

Second, achieving the underlying goal of species preservation cannot be accomplished without the cooperation and assistance of private landowners.[187] Private lands provide critical habitat for many species.[188] By some estimates, approximately half of the species listed under the Endangered Species Act have at least 80% of their habitat on private lands.[189] Land use change, which often happens on private land, is the primary driver of species loss.[190] Depending on management, working lands, like farms, ranches, and private forests, can provide habitat for many species, but when those lands are developed, that habitat disappears.[191] As the Western Landowners Alliance observed, "[W]e are losing a football field's worth of land to development every two and a half minutes in the West . . . [i]t's mostly private land lost—the same land that supports most of the remaining biodiversity as well as our food system and rural livelihoods."[192] Private lands can also

176. Exec. Order No. 14008, *Tackling Climate Change at Home and Abroad*, 86 Fed. Reg. 7619, 7627 (Jan. 27, 2021).
177. *See* Zellmer, *supra* note 104, at 177 (quoting former Secretary of the Interior Bruce Babbitt as opining that 30 x 30 could provide a "synthesizing, consolidating, organizing" theme that breaks down jurisdictional barriers and supercharges the biodiversity-climate movement").
178. The GAP Status Code is part of the Protected Area Database ("PADUS") and is a
> measure of management intent to conserve biodiversity defined as: Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, intensity, and legacy) are allowed to proceed without interference or are mimicked through management. Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive uses or management practices that degrade the quality of existing natural communities, including suppression of natural disturbance. Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type (e.g., logging, Off Highway Vehicle recreation) or localized intense type (e.g., mining). It also confers protection to federally listed endangered and threatened species throughout the area. Status 4: There are no known public or private institutional mandates or legally recognized easements or deed restrictions held by the managing entity to prevent conversion of natural habitat types to anthropogenic habitat types.

See PADUS by GAP Status, ScienceBase-Catalog, https://www.sciencebase.gov/catalog/item/56bba50ce4b08d617f657956 [https://perma.cc/LL9T-9B2N] (last visited Jan. 12, 2023).
179. *See* B. Alexander Simmons et al., *Delivering on Biden's 2030 Conservation Commitment* 3 (B.U. Glob. Dev. Pol'y Ctr. Working Paper, Paper No. 001, 2021), https://www.bu.edu/gdp/files/2021/01/BAS_Biden_EO_30x30_WP.pdf [https://perma.cc/C9EH-RTZG].
180. *See* Oscar Venter et al., *Bias in Protected-Area Location and Its Effects on Long-Term Aspirations of Biodiversity Conventions*, 32 Conservation Biology 127 (2017).
181. Simmons et al., *supra* note 179, at 3.
182. *Id.* at 2–3.
183. *See* Daniel Kraus & Andrea Hebb, *Southern Canada's Crisis Ecoregions: Identifying the Most Significant and Threatened Places for Biodiversity Conservation*, 29 Biodiversity & Conservation 3573 (2020).
184. *Id.* at 3581.
185. *Id.*
186. *Id.*
187. *Id.*
188. Keiter, *Toward a National Conservation Network Act*, *supra* note 86, at 86–87.
189. *Id.*
190. Juareguiberry et al., *supra* note 60, at 3 (concluding that land/sea use change have been the two dominant drivers of global biodiversity loss over recent decades); *see also* Galloway, *Clearing the Path to 30 x 30*, *supra* note 44, at 26 (noting that private lands comprise the majority of California's landmass and also contain high-value habitat and endangered species, but these lands are in danger of subdivision and increased urban sprawl or other private development like industrial agriculture, drilling, or mining).
191. Ryan Richards & Matt Lee-Ashley, *The Race for Nature: How Congress Can Help Farmers and Ranchers Save Their Lands and Survive the Coronavirus-Induced Economic Crisis*, Ctr. for Am. Progress 4 (June 23, 2020), https://www.americanprogress.org/article/the-race-for-nature/ [https://perma.cc/X6G5-TADK].
192. Press Release, W. Landowners All., Biden 30 x 30 Plan Emphasizes Landowners' Key Role in Conservation's Future (May 6, 2021), https://westernlandowners.salsalabs.org/release-biden30x30plan-may62021 [https://perma.cc/6VTJ-659V]; *see also* Owley & Phelps, *Federal Land Conservation in Rural Areas*, *supra* note 125, at 849–50 (noting that working private

help provide connectivity between protected areas, which is often necessary to maintain viable populations of species.[193] Private land conservation organizations are already working to preserve habitat and prioritize connectivity through land trusts. According to a census conducted by the Land Trust Alliance in 2021, 61 million acres were held by land trusts.[194] Including these lands in the continuum of conservation recognizes their contribution to species preservation and could facilitate landscape-scale species management.[195]

Even where private land is not held in a land trust, changing practices on private land, such as industrial agricultural operations, livestock facilities, private forestry operations, and even front yards can facilitate restoration or avoid degradation of an ecological resource where protective designations may be insufficient or infeasible. Efforts to restore the Chesapeake Bay demonstrate this opportunity. The Chesapeake Bay is the largest estuary in the United States, covering almost 64,000 square miles.[196] In 1991, over 150 million pounds of fish and shellfish were harvested from this productive system.[197] It also served as an essential nursery area for commercial, sport fish, and migratory fish species.[198] The shoreline of the Chesapeake Bay is primarily privately owned and developed with residential, commercial, and agricultural land uses.[199] Increases in agricultural development, population growth, and sewage treatment plant discharges caused the Bay to become nutrient-enriched.[200] Polluted stormwater runoff and overfertilization exacerbated the problem, resulting in hypoxic dead zones that killed fish and other living animals.[201] Thus, even if the Chesapeake Bay were to be characterized as a "conserved" public resource, it does not support the level of biodiversity that it used to due to ecological degradation.[202] Actions on private land are necessary to improve biodiversity outcomes.[203] Nitrogen and phosphorus from agricultural runoff are the largest source of nutrient pollution in the Chesapeake Bay watershed.[204] Best management practices, such as cover crops, nutrient management plans, installing streamside fencing to keep livestock out of water, and planting forest buffers to manage fertilizer and manure runoff, are some of the greatest opportunities for reducing nitrogen pollution in the future.[205] According to a multi-year study conducted by the Chesapeake Bay Foundation, farms that converted conventional farmland to rotationally grazed pastures experienced an average reduction in nitrogen pollution of 63%.[206] Implementation of these conservation measures must occur through the voluntary cooperation of private landowners.[207] This example demonstrates that effective "conservation" is not limited to permanent land designations. Regardless of whether the Chesapeake Bay could technically be considered "conserved," achieving the underlying purpose of biodiversity preservation in the Chesapeake Bay depends on encouraging private landowners to change existing land use practices.[208] By embracing a continuum of conversation measures, the ATB Initiative recognizes the value of achieving conservation outcomes by funding programs that change land use practices on private land in a way that benefits biodiversity.[209]

While the benefits of a broad definition are appealing, the label "conserved" is only as effective as the concept's management results. Federal grazing leases provide a great example. The American Farm Bureau urged the administration to count grazing leases as land that is "conserved."[210] There is merit to the request. Working lands can—and must—be included in the continuum of conservation to achieve the underlying biodiversity goals of the 30 x 30 target.[211] Managed properly, grazing lands have the

landscapes, like farmland or forest land, can offer environmental benefits like "providing wildlife habitat, preventing unsustainable patterns of urban sprawl, or preventing shifts to more damaging activities like fossil fuel development," but they also involve detrimental land practices like chemical applications and landclearing).

193. *See* Keiter, *Towards a National Conservation Network Act*, *supra* note 86, at 89–91.
194. Press Release, Land Tr. All., 61 Million Acres Voluntarily Conserved in America, 2020 National Land Trust Census Report Reveals (Dec. 7, 2021), https://landtrustalliance.org/newsroom/press-releases/61-million-acres-voluntarily-conserved-in-america-2020-national-land-trust-census-report-reveals [https://perma.cc/R7DJ-9EE6].
195. *See* Keiter, *Towards a National Conservation Network Act*, *supra* note 86, at 92.
196. *The Great Waters Program, Chesapeake Bay*, Env't Prot. Agency, https://archive.epa.gov/airquality/gr8water/web/html/chesapea.html [https://perma.cc/B7R7-U7AP] (last visited Jan. 12, 2023).
197. *Id.*
198. *Id.*
199. *Id.*
200. *Id.*
201. *Id.*; *see* Roy A. Hoagland & Jean G. Watts, *Federal Minimums: Insufficient to Save the Bay*, 29 U. Rich. L. Rev. 635, 643 (1995) (describing the ecological effects of nutrient enrichment); *Our History*, Chesapeake Bay Found., https://www.cbf.org/about-cbf/history/ [https://perma.cc/HAT6-Q4LT] (last visited Jan. 13, 2023) (describing history of efforts to "save the bay" beginning in the 1960s by using a private-sector voice that mobilizes the citizens of the region to "prod and assist" the government in dealing with the impacts of the 17 million people in its watershed).
202. Chesapeake Bay Found., 2022 State of the Bay Report (2022), https://www.cbf.org/about-the-bay/state-of-the-bay-report/ [https://perma.cc/H476-F4RE] (awarding a score of D+ due in part to excess pollution, degraded habitat, loss of habitat, and overfishing).
203. *Id.* at 6 (reporting that states are relying on farms to achieve roughly 90% of the remaining pollution reductions needed to meet the nitrogen and phosphorus goals established in the Chesapeake Clean Water Blueprint).
204. Matthew P. Miller et al., U.S. Geological Survey, Nitrogen in the Chesapeake Bay Watershed: A Century of Change 1950-2050 6 (John W. Clune & Paul D. Capel eds., 2021), https://pubs.usgs.gov/circ/1486/cir1486.pdf [https://perma.cc/9K3R-U37R].
205. *Id.* at 13.
206. Chesapeake Bay Found., Farm Forward: How Chesapeake Bay Farms Can Improve Water Quality, Mitigate Climate Change, Create a More Resilient Future, and Support Jobs and Local Economies 2 (2022), https://www.cbf.org/document-library/cbf-reports/farm-forward-report.pdf [https://perma.cc/9NT8-MSKU] (reporting that these practices also reduced net GHG emissions by 42%, phosphorus by 67%, and sediment pollution by 47%).
207. For a discussion of how federal policies can influence conservation outcomes on private land, see Owley & Phelps, *Federal Land Conservation in Rural Areas*, *supra* note 125, at 862–89.
208. Miller et al., *supra* note 204, at 140.
209. ATB, Year One Report, *supra* note 27, at 20 (listing expansion of Conservation Reserve Program and Wetland Reserve Enhancement Program as programs within the ATB Initiative).
210. Michael C. Blumm et al., *Federal Grazing Lands and Their Suitability as "Conservation Lands" in the 30 by 30 Program*, 52 ELR 1, 3 (2022) (noting that a coalition of 55 hunting and fishing organizations as well as the American Farm Bureau urged the Administration to include federal grazing lands in the conservation count).
211. *See, e.g.*, Galloway, *Clearing the Path to 30 x 30*, *supra* note 44, at 26–27 (noting that "without question, private lands must be part of

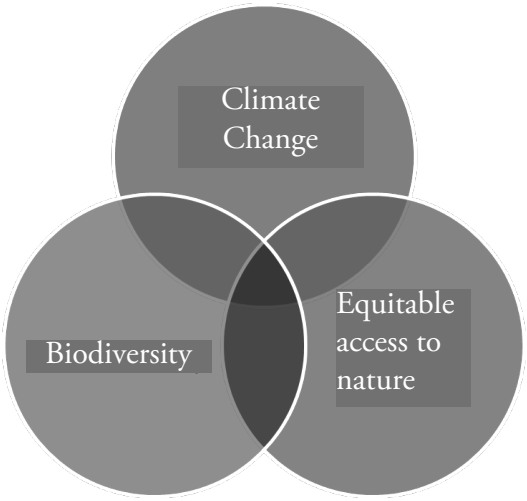
potential to provide wildlife habitat, watershed protection, maintenance of native plant species, open spaces, and carbon sequestration.[212]

However, grazing leases on federal lands are not always managed adequately. The most recent available Rangeland Inventory and Monitoring Evaluation Report issued by the Bureau of Land Management in 2018, showed that only 36% of the acres subject to federal grazing allotments were meeting rangeland health standards or making progress toward meeting those standards.[213] One reason for such a low number is that much of the land—38% of the acres—had not been assessed.[214] The remainder, 42% of the assessed acres, were failing rangeland health standards.[215] This shortfall demonstrates that it is not enough to label a practice as "conservation" based on its potential benefits. Whether a project qualifies as "conservation" should depend on its management protocols and outcomes.[216] Otherwise, the continuum of conservation could be stretched so far that it includes projects that undermine the goals of the ATB Initiative by contributing to species loss, climate change, or environmental injustice. This result would compromise the credibility of the ATB Initiative.

V. Acknowledging Diverse Outcomes Within a "Continuum of Conservation"

Curtailing climate change, halting biodiversity loss, and increasing access to nature are worthy aspirations. Although these three goals overlap in some areas, they diverge in others. Though simplistic, the Venn diagram below illustrates this point. A vast range of projects may fall within one of the three priorities, but very few projects will satisfy all three priorities.

Figure 1: Venn Diagram Depicting Intersecting Priorities of the ATB Initiative



A mapping analysis conducted by Boston University, explored the lack of congruence between the different goals of the ATB Initiative, finding that only 2% of the coterminous United States satisfied two of the ATB Initiative's competing priorities—biodiversity and climate change.[217] Presumably, if the project had included equitable access to nature, even less land would have qualified.

The Year One Report also illustrates this tension.[218] Although every project listed in the report ostensibly serves at least one of the three purposes of the initiative—climate change mitigation, biodiversity protection, or access to nature—the projects do not offer equivalent ecological benefits. In fact, some projects appear to be in tension with each other. For example, in an effort to "increase access for outdoor recreation," the U.S. Fish and Wildlife Service expanded hunting areas in 88 national wildlife refuges—a move that was legally challenged for threatening vulnerable and endangered species.[219] Similarly, the Recreational Trails Program provides $84 million annually to states to develop and maintain motorized and nonmotorized recreational trails.[220] But without careful planning, motorized recreational trails can have devastating ecological effects.[221] As one expert summarized, offroad vehicles can "directly

the conservation effort to realistically and effectively meet the 30 x 30 goal" in California).

212. *See* 43 C.F.R. §§ 4180.1, 4180.2 (listing ecological functions to be protected under rangeland health standards including endangered species habitat, riparian and wetland preservation, native plant species management); Alan Franzluebbers & John A. Stuedemann, *Surface Soil Changes During Twelve Years of Pasture Management in the Southern Piedmont USA*, 74 Soil Sci. Soc'y Am. J. 2131, 2131–41 (2010) (reporting that moderate grazing on planted pastures in Georgia enhanced soil health and carbon sequestration); Dennis O'Brien, *Grazing of Cattle Pastures Can Improve Soil Quality*, Agric. Rsch. (Mar. 3, 2011), https://www.ars.usda.gov/news-events/news/research-news/2011/grazing-of-cattle-pastures-can-improve-soil-quality/ [https://perma.cc/J858-79HH] (summarizing Alan Franzluebbers research as concluding that grazing enhances carbon sequestration).

213. Bureau of Land Mgmt. (BLM), National Rangeland Inventory, Monitoring & Evaluation Report (2018) (Table 5(B)). Although this report is not available on BLM's website, it was obtained by Public Employees for Environmental Responsibility through a FOIA request and the report data (Table 5) was posted on their website at https://peer.org/americas-rangelands-deeply-damaged-by-overgrazing/ [https://perma.cc/PXY8-G4J4].

214. *Id.*

215. *Id.*; Michael C. Blumm et al., *supra* note 210, at 13 (citing Press Release, Public Emps. for Env't Responsibility, *America's Rangelands Deeply Damaged by Overgrazing* (Mar. 5, 2020), https://peer.org/americas-rangelands-deeply-damaged-by-overgrazing/ [https://perma.cc/PXY8-G4J4]).

216. *Compare* IUCN, Recognizing and Reporting Area-Based Conservation Measures, *supra* note 111, at v ("OECMs may be managed for many different objectives but they *must* deliver effective conservation.").

217. *See* Simmons et al., *supra* note 179, at 6. Note that this study articulated the competing priorities of the ATB Initiative slightly differently and focused on affordable acreage, biodiversity preservation, and climate mitigation through carbon reduction and sequestration. *See id.* This study did not address the additional goals of expanding access to nature and addressing environmental injustices. *See id.*

218. ATB, Year One Report, *supra* note 27, at 6–24 (listing projects).

219. ATB, Year One Report, *supra* note 27, at 18; Michael Doyle, *Greens Sue to Block Expanded Hunting on Wildlife Refuges*, E&E News (Nov. 29, 2021, 4:21 PM), https://www.eenews.net/articles/greens-sue-to-block-expanded-hunting-on-wildlife-refuges/#:~:text=Environmentalists%20today%20sued%20the%20Fish,opportunities%20in%20national%20wildlife%20refuges [https://perma.cc/A2BV-U9EG].

220. ATB, Year One Report, *supra* note 27, at 18.

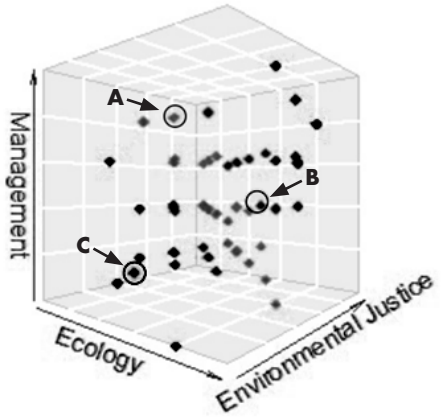
221. *See, e.g.*, John C. Adams & Stephen F. McCool, *Finite Recreation Opportunities: The Forest Service, The Bureau of Land Management, and Off-Road Vehicle Management*, 49 Nat. Res. J. 45 (2009).

and indirectly damage vegetation and wildlife, fragment habitat, displace sensitive species, introduce and distribute invasive species, and provide extensive access to legal hunting and illegal poaching of wildlife."[222] These effects are all drivers for biodiversity loss.[223] The Year One Report also touted the Travel, Tourism, and Outdoor Recreation Grants administered by the Economic Development Administration fund marketing campaigns to encourage tourism.[224] While this may be beneficial to local communities, it is hard to see how it mitigates climate change, avoids species loss, or furthers access to nature for underserved communities. Without a unifying policy to connect these diverse projects, they are not likely to meaningfully contribute to a national conservation strategy.

Moreover, not every project has the same degree of efficacy. Some projects may be well-implemented, while others falter. A project with good intentions and poor outcomes will not contribute to achieving the goals of the ATB Initiative, regardless of its purpose.[225] Thus, projects should not be characterized as "conservation" based solely on their intentions. Instead, the project's management protocols and conservation outcomes should be transparent.

The 3D graph below illustrates these tensions by graphing three relevant metrics for assessing the quality of a conservation project.[226] Those are: (1) ecological health, which supports biodiversity and mitigates climate change; (2) environmental justice[227]; and (3) management protocols that contribute to the likelihood of successful outcomes. The colored circles within the graph roughly illustrate how different projects would be located at a different point within the conservation continuum, depending on the priorities and outcomes of the project. The bullet points below the graph describe the three hypothetical projects. Each of the hypothetical projects presumably fall within the continuum of conservation because they are modeled after a similar project described within the ATB Year One Report. Although each of the hypothetical projects fall within the "continuum of conservation," they do not offer equivalent benefits.

Figure 2: 3-Axis Graph Depicting Three Different Metrics for Assessing the Quality of Conservation Projects



- *"A" Circle:* Some projects may have excellent management protocols and advance social and environmental justice but have poor ecological outcomes. This could occur for a variety of reasons. Perhaps the project is located in an area that was devastated by wildfire or was heavily contaminated by prior land uses. Even though the ecological health of the project is characterized as "very poor," and will likely remain so for years to come, the management of the project could be excellent. Imagine that the project is located on a permanent conservation easement with specific, time-sensitive ecological goals responsive to ecological threats in the area. Suppose that the project also has a monitoring program designed to reflect progress toward its ecological goals, it publicizes the monitoring results, and it has specific adaptive management triggers that are responsive to the monitoring outcomes. Despite the poor ecological health of the project area, the management protocols are high-quality. Ideally, over time, the ecological health of the area will improve as a result of good management.
- *"B" Circle:* Another project may have moderate ecological health benefits even though the project is located in an area without permanent legal protection, lacks an ecological objective, does not disclose monitoring information, and has not developed an adap-

222. *Id.* at 49 (quoting Dave Havlick, No Place Distant: Road and Motorized Recreation on America's Public Lands 91 (2002)).
223. Juareguiberry et al., *supra* note 62, at 3 (arguing that drivers of biodiversity loss include hunting, poaching, and habitat degradation).
224. ATB, Year One Report, *supra* note 27, at 18; *Travel, Tourism & Outdoor Recreation*, U.S. Econ. Dev. Admin. https://www.eda.gov/funding/programs/american-rescue-plan/travel-tourism [https://perma.cc/U6LJ-S372] (last visited Sept. 30, 2022) (explaining features of the Travel Tourism and Outdoor Recreation Program, including the State Tourism Grants, which "help states quickly invest in marketing, infrastructure, workforce, and other projects to rejuvenate safe leisure, business, and international travel").
225. *See* Marc Hockings, *Systems for Assessing the Effectiveness of Management in Protected Areas*, 53 BioScience 823 (2003) ("To maximize the potential of protected areas, managers and policymakers need information on the strengths and weaknesses in their management and on the threats and stresses they face.").
226. This graph is an unscientific illustration developed solely for this paper to visually portray how projects within the continuum of conservation may offer divergent conservation benefits.
227. The term "environmental justice" is broad and complex. *See, e.g.*, Clifford J. Villa, *No "Box to Be Checked:" Environmental Justice in Modern Legal Practice*, 30 N.Y.U. Env't L.J. 157, 164 (2022) ("One of the most vexing questions in environmental justice practice has always been what exactly is meant by 'environmental justice' or even whether 'environmental justice' is the best term to use."). According to the U.S. Environmental Protection Agency ("EPA"), it is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." *Environmental Justice*, U.S. Env't Prot. Agency, https://www.epa.gov/environmentaljustice [https://perma.cc/D87P-3MQN] (Jan. 10, 2023). The language used by the ATB Initiative focuses on equitable access to the outdoors and nature. ATB, 90-Day Report, *supra* note 23, at 9. For the purpose of assessing the ecological and social benefits of a conservation project, this Article suggests that focusing solely on access to nature is too narrow. The broader lens of environmental justice is more informative because it includes equitable access to nature but excludes projects that increase recreational access without addressing inequitable distribution of this benefit.

tive management strategy. However, perhaps this project prioritizes social and environmental justice outcomes. An example would be regreening vacant lots into functional parks, or vegetable gardens and rain gardens in Baltimore, Maryland.[228] This type of project might be located along the continuum in the location near the circle labeled B.

- *"C" Circle:* Alternatively, some projects may produce poor ecological outcomes, have management protocols that are not focused on prioritizing biodiversity, and have no monitoring program or climate mitigation practices. An example of this type of project could be a state park dedicated to offroad vehicle recreation, a reservoir stocked with non-native fish and managed for motorized boating adventures, or a developed campground dedicated to seasonal motorhome usage. As recognized by the Recreation Economy for Rural Communities,[229] these types of projects may have social benefits for a local economy and provide outdoor recreation opportunities, but they do not contribute to preserving biodiversity or mitigating climate change. This type of project might be located along the continuum in the location near the circle labeled C.

The graph and hypothetical projects demonstrate the complexity of recognizing a continuum of conservation. Very few projects will maximize all three objectives. Additionally, not all projects will have equally successful outcomes. Due to this complexity, it is not enough to collect projects and gather acreage. Expanding the definition of "conservation" will not achieve the purposes of the ATB Initiative. However, the incongruity between projects' goals and outcomes could undermine the credibility of the ATB Initiative. To avoid this result, the Administration should develop a transparent methodology for disclosing the goals, management protocols, and outcomes of conservation projects.

VI. Developing a Transparent Methodology to Disclose the Goals, Management Protocols, and Outcomes of Conservation Projects

The risk of defining conservation too broadly is that the term could lose credibility. In 1970, George A. Akerlof explored a concept that he referred to as "the economic costs of dishonesty."[230] Analyzing the used car market as a model, Akerlof demonstrated that when there is uncertainty about the quality of a product, buyers assume the worst.[231] Without labels or guarantees to counteract the asymmetry of information, uncertainty can ruin an otherwise valuable market.[232] This scenario—for which he won a Nobel Prize—became referred to as a "Lemons Market."[233] Like the used car market analyzed by Akerlof, if the ATB Initiative liberally labels projects as "conservation" without providing a way for the public to assess the efficacy and quality of projects, the label could lose credibility.

Within this context, the ATB Initiative could be perceived as a greenwashing tool. "Greenwashing is generally defined as unsubstantiated or misleading claims regarding . . . environmental performance."[234] It can also refer to "selective disclosure of positive environmental or social impacts . . . without complete disclosure of negative impacts."[235] As one scholar explained, "[i]t is well documented that even isolated instances of greenwashing can make consumers skeptical of all products marketed as 'green,' and can lead consumers to question not only the supposed eco-attributes of those products, but all claims about those products made in marketing materials."[236] Before embracing such a broad definition of conservation, the ATB Initiative would be wise to review the principles articulated by the Federal Trade Commission ("FTC") to help companies avoid accusations of greenwashing.[237] Those principles are: (1) substantiate claims before making them; (2) avoid broad, unqualified claims that are not applicable in all circumstances; (3) avoid claiming something is "safer" or "better" without qualifying the comparison; (4) avoid exaggerating or overstating environmental benefits; (5) avoid using terms that are potentially deceptive because they are not understood.[238] These principles should guide the Administration's unfinished task of creating guidelines for determining whether a project qualifies as "conservation" within the ATB Initiative. The Administration should develop a labeling system that verifies and publishes the conservation outcomes of projects. A transparent labeling system would eliminate broad, unqualified—or exaggerated—claims of conservation and replace it with facts to substantiate the degree of conservation benefits offered by a project.[239]

228. ATB, Year One Report, *supra* note 27, at 9.
229. *See id.* at 17.
230. *See* George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. Econ. 488 (1970).
231. *Id.* at 489.
232. *See id.* at 499–500.
233. George A. Akerlof, *Writing the "The Market for 'Lemons'": A Personal Interpretive Essay*, The Nobel Prize (Nov. 14, 2003), https://www.nobelprize.org/prizes/economic-sciences/2001/akerlof/article/ [https://perma.cc/C6HS-DE5T].
234. Akriti Bhargava et al., Climate-Washing Litigation: Legal Liability for Misleading Climate Communications 4 (2022).
235. *Id.*
236. *See* Robin M. Rotman et al., *Greenwashing No More: The Case For Stronger Regulation of Environmental Marketing*, 72 Admin. L. Rev. 417, 439 (2020).
237. On December 20, 2022, the FTC issued a Request for Public Comment on its "Guides for the Use of Environmental Marketing Claims ("Green Guides" or "Guides"). The deadline for comments is February 21, 2023. *See* Federal Trade Commission, Guides for the Use of Environmental Marketing Claims, 87 Fed. Reg. 77766 (Dec. 20, 2022). The discussion below focuses on the current version of the Green Guide, which was issued in 2012.
238. J. Thomas Rosch, Comm'r, Fed. Trade Comm'n, Speech at the American Conference Institute's Regulatory Summit for Advertisers and Marketers: Responsible Green Marketing, at 6–8 (June 18, 2008); Federal Trade Commission, *Guides for the Use of Environmental Marketing Claims*, 77 Fed. Reg. 62122, 62125 (2022) (to be codified at 16 C.F.R. pt. 260) (publishing the updated version of the "Green Guides" to help companies avoid making environmental claims that mislead consumers).
239. *Compare* ATB, Year One Report, *supra* note 27 and associated text.

In addition to protecting the credibility of the ATB Initiative, there is another reason to impose more structure onto the concept of conservation. Without a mechanism to assess the purpose, quality, and efficacy of projects, the ATB Initiative will not produce the information necessary to analyze progress toward the underlying purposes of biodiversity preservation, climate change mitigation, and environmental justice. Assessment of progress was one of the charges set forth in EO 14008.[240]

For both of these reasons, the ATB Initiative should focus on developing a methodology for transparently disclosing the goals, management protocols, monitoring results, conservation outcomes, and durability of projects included in the ATB Initiative.[241] Standardized disclosures would enable the public to evaluate the purpose, efficacy, and quality of projects along the continuum of conservation. This would allow the recognition of a broad range of conservation strategies, without suggesting that they offer equivalent benefits.

A. Develop Guidelines to Identify Effective Conservation Practices

There are established and accepted ways of evaluating and comparing projects based on ecological outcomes, management, and environmental justice. These methodologies could be imported directly into the ATB Initiative, expediting rollout and improving the likelihood that the Initiative will advance its stated goals.

The first step is to identify hallmarks of effective conservation projects.[242] Reinventing the wheel is unnecessary, as this question has been thoroughly studied.[243] For example, REDD+ projects have been implemented and monitored across the world since 2013.[244] REDD+ is a framework created by the United Nations Framework Convention on Climate Change Conference of the Parties to guide activities in the forest sector devoted to reducing emissions from deforestation and forest degradation, plus the sustainable management of forests and the conservation and enhancement of forest carbon stocks.[245] Implementation of REDD+ activities is voluntary, and projects are implemented in a wide range of circumstances and diverse jurisdictions.[246] Across this wide variety, experience has identified effective conservation practices. An empirical study of 80 international REDD+ conservation projects provided five recommendations to ensure that REDD+ projects deliver on their conservation goals.[247] These recommendations identify hallmarks of effective conservation practices. They are:

(1) Projects should carefully document the existing status of biodiversity and threats, then use this information to select appropriate interventions.[248]

(2) Biodiversity objectives should clearly describe the species or ecosystems that will be conserved, including quantitative, time-bound targets that permit later assessment of whether the goals have been met.

(3) Projects should carefully select interventions that will address the threats to biodiversity and achieve the desired biodiversity goals.

(4) Monitoring should be planned early in the design of the project and should be crafted to both document progress toward biodiversity goals and enable adaptive management.

(5) Projects should make explicit plans for how monitoring results will be used for informing future implementation through a formal process of adaptive management.[249]

The hallmarks of effective conservation identified in these recommendations are consistent with the criteria for identifying OECMs.[250] They are also consistent with the principles identified in the IUCN's Green List Standard, which provides a global benchmark to assess whether protected and conserved areas are achieving successful conservation outcomes through effective and equitable governance and management.[251] They are also consistent with observations made by other scholars considering the identifying hallmarks of effective conservation projects.[252]

240. *See* Exec. Order No. 14008, *Tackling Climate Change at Home and Abroad*, 86 Fed. Reg. 7619, *supra* notes 115–18 and accompanying text.

241. Simmons et al., *supra* note 179, at 6 ("[S]trategic implementation of the 30x30 target will require clear objectives to understand trade-offs and maximize conservation and climate outcomes.").

242. This is particularly true because the Administration has distinguished the term "conservation" from "protected." *See* ATB, Year One Report, *supra* note 27 and accompanying text; Zellmer, *supra* note 104, at 175 (offering a definition of "protected" that is consistent with current international and domestic standards).

243. *See* UNEP Convention on Biological Diversity, *supra* note 106, at 12–14 and associated text.

244. REDD+ is a framework created by the UNFCCC to guide activities in the forest sector that reduce emissions from deforestation and forest degradation. It encourages the sustainable management of forests and the conservation and enhancement of forest carbon stocks in developing countries. *See What Is REDD+?*, United Nations Framework Convention on Climate Change, https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd [https://perma.cc/8GSQ-GFE9] (last visited Feb. 13, 2022).

245. Most REDD+ projects apply the Climate, Community, and Biodiversity Standards (the organization that created the Sustainability Landscapes Rating Tool discussed below) to communicate the quality of a conservation project. Steven N. Panfil & Celia A. Harvey, *REDD+ and Biodiversity Conservation: A Review of the Biodiversity Goals, Monitoring Methods, and Impacts of 80 REDD+ Projects*, 9 Conversation Letters 143 (2015).

246. *What Is REDD+?*, *supra* note 244.

247. Panfil & Harvey, *supra* note 245, at 143–50.

248. *Id.*

249. *See id.* at 148–49.

250. *See* UNEP Convention on Biological Diversity, *supra* note 106, at 12–14. The criteria for identifying OECMs include: (1) identification of the location and ecosystem functions to be preserved; (2) legitimate governance and management strategies to achieve positive and sustained outcomes; (3) identification and avoidance of threats to biodiversity sustained over the long-term; (4) a monitoring system that is public and informs future governance decisions; (5) contextual respect and recognition of other ecosystem functions and services, as well as local and Indigenous communities. *See id.*

251. IUCN, Green List of Protected and Conserved Areas: Standard, Version 1.1 at 5–6, (2017) (summarizing the objectives as focused on good governance; sound design and planning; effective management; and successful conservation outcomes).

252. Authors in a variety of contexts identified similar hallmarks of conservation. *See* Maria L. Banda, *The Bottom-Up Alternative: The Mitigation Po-*

Applying these lessons to the ATB Initiative, the following guidelines should be adopted to determine whether—and where—a project falls within the continuum of conservation:

(1) Identification of an ecological and/or environmental justice benefit.
(2) Specific objectives to be met to achieve or maintain that benefit.
(3) A monitoring plan for ensuring achievement of the benefit.
(4) Adaptive management with specific triggers.
(5) Reporting requirements.
(6) (Transparent disclosure of the project's durability.

These guidelines are broad enough to embrace the full continuum of conservation but specific enough to differentiate between projects that have conservation management protocols and those that do not. Disclosures related to each of these elements would allow the public to understand the goals of the project, the intended outcomes, the strategy for achieving those outcomes, the degree of success achieved, and the longevity of a project. In turn, this information will assist the administration in measuring progress toward the 30% goal and achievement of the ATB Initiative's underlying purposes.

B. Create Conservation Report Cards That Provide a Standardized Reporting Methodology to Publicize a Project's Purpose, Management Protocols, Monitoring Results, Conservation Outcomes, and Durability

The ATB Initiative should develop a standardized reporting methodology. Examples already exist, and these can be adopted to the goals and priorities of the ATB Initiative.[253] For example, the Climate, Community & Biodiversity ("CCB") Standards are used internationally to validate agriculture, forestry, and land use projects within the voluntary carbon market.[254] To enable rapid assessment of key governance elements that support sustainable landscapes, the CCB Standards developed a tool called the Sustainable Landscapes Rating Tool.[255] Using an objective, evidence-based rating system, the Sustainable Landscapes Rating Tool provides a snapshot of a project's capacity to establish and ensure management strategies that are consistent with achieving the project's conservation goals.[256] Investors rely upon the results of the assessment in conducting due diligence.[257] When used to validate a project for the carbon market, an independent auditor applies the standards at two stages: the project design stage and post-implementation to verify benefit delivery.[258]

There are two elements to the Sustainable Landscapes Rating Tool: an assessment methodology and a report card.[259] The assessment methodology uses a grade sheet to evaluate various management aspects of each project. The grade sheet identifies (1) criteria defining each project, (2) indicators of quality for each ecological criteria, (3) guidance for rating the quality of each indicator, and (4) a section for written comments to justify the rating.[260] A segment of the assessment sheet for the criterion of land use planning is reproduced above.

Although this sample includes only the first criterion, the grade sheet is comprehensive.[261] Not every category is relevant to the goals of the ATB Initiative, but the concept and the format are useful examples. The exact language on the assessment methodology is less important than the practice of conducting assessments and publicizing the results.

tential of Private Climate Governance After the Paris Agreement, 42 Harv. Env't L. Rev. 325, 350–51 (2018) (recommending a framework to assess the "mitigation potential, or effectiveness, of different private climate governance schemes using the following six criteria: integrity, uptake, ambition, resilience, transparency, and materiality); K. King Burnett et al., *Building Better Conservation Easements for America the Beautiful*, Harv. Env't. L. Rev. Online, at 8 (2021) https://harvardelr.com/2021/09/15/building-better-conservation-easements-for-america-the-beautiful/ [https://perma.cc/B8WD-YUYR] (recommending that conservation easements only be counted toward the America the Beautiful goal if they are "(a) limited to lands with demonstrable conservation values; (b) drafted to protect those values; (c) durable—that is, subject to clear limits on how they may be modified post-donation; and (d) held only by entities that have the capacity and obligation to monitor and enforce compliance with their conditions"); Brian Gray et al., *Implementing Ecosystem-Based Management*, 31 Duke Env't L. & Pol'y F. 215, 223 (2021) (describing five governance requirements identified by the Public Policy Institute of California that must be met for successful ecosystem based management: "(1) explicit goals for desired ecosystem conditions, benefits, and beneficiaries; (2) metrics and time-specific performance measures to assess goal achievement; (3) strong, transparent, and collaborative science; (4) regulatory alignment across multiple agencies with transparent governance and administration; (5) reliable funding for habitat improvements, ongoing operations and maintenance, science and monitoring, and administration").

253. *See, e.g.*, Nature 2030, *supra* note 43, at 22 (providing an outcome-based assessment methodology for measuring progress toward the IUCN's goals).
254. *Climate, Community & Biodiversity Standards*, Verra, https://verra.org/project/ccb-program/ [https://perma.cc/EAJ4-9M9K] (last visited Jan. 13, 2023).
255. *See Sustainable Landscapes Rating Tool*, Climate, Cmty. & Biodiversity All., https://www.climate-standards.org/sustainable-landscapes-rating-tool/ [https://perma.cc/CXH9-GF9Z] (last visited Jan. 13, 2023).
256. *Id.*
257. *Id.*
258. *Id.*
259. *Sustainable Landscapes Rating Tool, Guidance*, Climate, Cmty. & Biodiversity All. 4 (2017), https://s3.amazonaws.com/CCBA/sustainable+landscapes+rating+tool/Version+1+June+2017/SLRatingTool_Guidance_1June2017.pdf [https://perma.cc/X78F-MZ5G] [hereinafter SLRB Guidance]. Versions of the assessment methodology and report card are available as documents that can be downloaded from the Climate, Community and Biodiversity Alliance ("CCBA") website. *Sustainable Landscapes Rating Tool*, Climate, Cmty. & Biodiversity All., https://www.climate-standards.org/sustainable-landscapes-rating-tool/ [https://perma.cc/2M6M-QF8P] (last visited Jan. 13, 2023). The assessment methodology described in this paper is the "Sustainable Landscape Rating Tool—Version 1 June 2017 with further guidance 9 February 2018." *Id.* The document described in this paper as the "report card" is the "Sustainable Landscape Rating Tool—Version 1 June 2017 Summary Template." *Id.*
260. *See Sustainable Landscapes Rating Tool*, *Version 1.1*, Climate, Cmty. & Biodiversity All. (June 2017), https://www.climate-standards.org/sustainable-landscapes-rating-tool/ [https://perma.cc/3RH5-2HUU] (last visited Jan. 13, 2023).
261. *Id.* (including 114 criteria).

Figure 3: Excerpt of the Sustainable Landscapes Rating Tool Assessment Methodology[a]

Criteria-enabling conditions	Indicators - elements of quality	Guidance on Rating (A, B, C, or D Insufficient Data) A (High)	B (Medium)	C (Low)	Level 1. Public information 2. From interviews	Rating A, B, C, or D (Insufficient Data)	**Justification and Evidence** Justify the rating (A, B, C, D) given for each indicator. Provide links to supporting evidence in the form of policies, strategies, plans, maps, reports, etc. Explain clearly where rating is based on national and/or sub-national frameworks. Identify which national or sub national law/institution/practice is the subject of the rating. Users may explain trends or expected changes to rating, providing supporting evidence such as reports and plans.
1. Land Use Planning and Management							
1.1 Land use plan/ zoning	1.1.1 Formally Adopted	Adopted by law adopted and regulations require that it is respected.	Agreed by government and stakeholders but not fully legally adopted.	Does not yet exist. May be in development.	1		*Guidance: Users should provide a reference for the analysis of stakeholder groups used for the rating and evidence of stakeholder groups that were invited to and participated in consultations. Evidence that stakeholder input influenced the plan/zoning may include a written statement or minutes of a meeting explaining of how stakeholder input was taken into account or other relevant documentation.*
	1.1.2 Covers entire jurisdiction	Covers entire jurisdiction land area.	Covers 50% or more of jurisdiction land area.	Covers less than 50% of jurisdiction land area.	1		
	1.1.3 Developed through a participatory process	Consultations were held with all groups of stakeholders in the jurisdiction (including all levels and relevant departments of government, relevant private sector organizations, large and small producers, NGOs.	Consultations have been conducted with some but not all groups of stakeholders about the land use plan/ zoning and/ or not meeting all other conditions for A.	There is no evidence of consultations with stakeholders about the land use plan/ zoning.	1		

[a] *See infra* note 260.

Once the assessment has been completed, the results are summarized in a standardized, color-coded Report Card.[262] A sample of the Report Card for a project in San Martin, Peru is set forth below.[263] The Sustainable Landscape Rating Tool Guidance document displayed the sample shown in Figure 4 (next page) and is specific to the criterion of land use planning.

The Report Card summarizes information about each conservation project in an accessible, standardized format. A potential investor or the public may use the Report Card to quickly evaluate the efficacy and quality of each conservation project.[264]

The ATB Initiative should create a similar assessment methodology that would situate a project along the continuum of conservation. These could be called Conservation Report Cards. Relevant metrics would include: (1) whether the project identifies specific ecological goals that preserve biodiversity, address climate change, or improve environmental justice; (2) whether the project identifies specific objectives to achieve or maintain those goals; (3) whether the project has a monitoring plan for ensuring achievement of the benefit; (4) whether the project has an adaptive management plan with specific triggers tied to the monitoring data; (5) whether the project has a data and monitoring system in place that is

262. SLRB Guidance, *supra* note 259, at 4. The document referred to as the "report card" in this paper is called the "Sustainable Landscape Rating Tool—Version 1 June 2017 Summary Template." It can be downloaded on the CCBA website.

263. *Id.*

264. *Id.*

Figure 4: Sample of the Report Card Used by the Sustainable Landscapes Rating Tool[a]

Sustainable Landscapes Rating Tool[1]—Summary
Assessing Jurisdictional Policy and Governance Enabling Conditions

Jurisdiction: XXXX	Country: XXXX	Date assessed: XXXX	Assessed by: XXXX How accessed : literature reviews, reviews		
Main export commodities: e.g., coffee, cocoa, palm oil					
Government pledges/commitments to sustainability: e.g., New York Declaration on Forests, Rio Branco Declaration					
National Ratings: e.g., Forest 500 (2016) - 4/5 including 5/5 for policies and 3/5 for transparency. Transparency International Corruption Perception Index (2016) - 35, 101/176. World Bank Ease of Doing Business (2017) - 54/190 including 103/190 for starting a business, 37/190 for registering property, 16/190 for getting credit, 86/190 for trading across borders. Economist Intelligence Unit (2017)					
Sub-national Ratings: none available					
A - high, full, clear	B - medium, partial	C - low, not addressed	ID - insufficient data	Level 1 Public information	Level 2 From interviews
1. Land use planning and management			**B**		
1.1 Land use plan/zoning			B[2]		
1) Formally adopted				B	
2) Cover entire jurisdiction				B	
3) Developed through a participatory process				B	

[a] See SLRB Guidance, *supra* note 259.

public and satisfies reporting requirements so that the public can determine the project's efficacy; and (6) the durability of the project.[265]

The transparency afforded by Conservation Report Cards would serve multiple purposes. First, it would enable the public to differentiate between conservation projects based on their purpose, management protocols, and efficacy. This would allow the ATB Initiative to embrace a continuum of conservation without overstating the environmental attributes of a project.[266] Second, it would provide a standardized reporting mechanism that could also be used for applying to grants and reporting deliverables.[267] Third, it would promote and recognize well-managed conservation projects. Fourth, publicizing management protocols and monitoring results would facilitate development of best practices and adaptive methodologies within a wide variety of contexts. Fifth, it would verify the ecological benefit of non-traditional conservation projects with sufficient detail to satisfy the criteria for identifying OECMs under the Convention on Biological Diversity.[268] This would be a valuable way to cooperate with the international goals that the Convention seeks to achieve, regardless of whether the United States ratifies the Convention. In summary, these disclosures would avoid accusations of greenwashing or the development of a Lemons Market within the conservation sphere by offering a legitimate way to verify the conservation label applied to a project within the ATB Initiative.

C. *Publish the Conservation Report Cards in the Conservation Atlas*

The Conservation Report Cards could be reported in the American Conservation and Stewardship Atlas.[269] The results could also be used to periodically update the baseline conditions of lands and waters that are conserved or restored within the ATB Initiative.[270] This specific, up-to-date information would enable a results-based analysis of progress toward the goals of the ATB Initiative.

Compiling information from the Conservation Report Cards could also provide specific information about conservation management strategies, their efficacy, and their durability. This could inform future management decisions, identify best practices, and recognize high-priority areas needing additional conservation management. For example, geographically orga-

265. *Compare* notes 241–51 and associated text.
266. *See* Green Guides, 16 C.F.R. § 260.3(c) (advising marketers to avoid overstating, directly or by implication, an environmental attribute or benefit).
267. *See, e.g.*, Press Release, White House, Biden-Harris Administration Launches $1 Billion America the Beautiful Challenge to Support and Accelerate Locally Led Conservation and Restoration Projects (Apr. 11, 2022), https://www.whitehouse.gov/ceq/news-updates/2022/04/11/biden-harris-administration-launches-1-billion-america-the-beautiful-challenge-to-support-and-accelerate-locally-led-conservation-and-restoration-projects/ [https://perma.cc/252T-FE7R] (announcing that consistent metrics for conservation and restoration deliverables will be reported across projects and funds to improve outcomes).
268. *See* IUCN, Recognizing and Reporting Area-Based Conservation Measures, *supra* note 111, at 8, 13 (establishing screening tools to identify OECMs and principles for monitoring and reporting conservation outcomes).
269. U.S. Dep't Interior, Request for Information to Inform Interagency Efforts to Develop the American Conservation and Stewardship Atlas, 87 Fed. Reg. 235 (Jan. 4, 2022).
270. *Id.*

nized statistics could be generated indicating the amount and location of projects dedicated to biodiversity preservation. This information could be used to identify potential wildlife corridors, buffer zones, or wildlife crossings. It could help coordinate distinct projects under different jurisdictional authorities and refine their management protocols to achieve better conservation outcomes. Additionally, a spatially organized display of conservation projects could spur collaboration and partnership opportunities across jurisdictional boundaries consistent with the far-reaching vision of the ATB Initiative. Synthesizing this information would promote long-term stewardship of the nation's natural resources.[271]

VII. Conclusion

Committing to conserve 39% of the lands and waters of the United States by 2030 is consistent with growing international consensus of what is necessary to avoid biodiversity loss and address climate change. In addition to these two goals—preserving biodiversity and addressing climate change—the Biden Administration expanded the ATB Initiative to include equitable access to nature. To achieve the underlying goals of the ATB Initiative, and perhaps to avoid political controversy, the Biden Administration endorsed the concept of a continuum of conservation. This ambiguous phrase, which includes many non-traditional conservation projects, has promise. It could open the door to achieving conservation outcomes that would not be possible simply by expanding the existing network of protective land designations. On the other hand, defining conservation too broadly could dilute the meaning of the term and destroy the credibility of the ATB Initiative. Applying the term "conservation" to projects that do not produce beneficial environmental outcomes could be perceived as greenwashing, which would destroy the potential of the ATB Initiative.

To avoid accusations of greenwashing and the creation of a Lemons Market, the Administration should develop a transparent methodology to disclose the goals, management protocols, and outcomes of conservation projects included in the ATB Initiative. Examples of this type of assessment methodology already exist in the voluntary carbon credit market and are used internationally to compare the outcomes of conservation projects in a wide variety of jurisdictions. Adapting these methodologies to the goals of the ATB Initiative, the Administration could create Conservation Report Cards, which would provide standardized disclosures about a project's goals, management protocols, monitoring results, conservation outcomes, and durability. The results of the Conservation Report Cards should be published in the Conservation Atlas. This information would enable recognition of a continuum of conservation, without suggesting that all projects within the continuum provide similar benefits. With standardized, granular information, the public can differentiate between projects situated along the continuum of conservation, instead of relying on the generalized claim of conservation that could be perceived as misleading.

This approach would achieve several results. First, it would achieve the Administration's original directive in EO 14008 to create guidelines for determining whether lands and waters qualify for conservation and establish mechanisms for measuring progress toward the 30% goal. Second, it could facilitate the development of creative and non-traditional approaches to conservation and recognize successful efforts. Third, applying a set of formalized metrics that the public can understand engenders transparency. Fourth, publicizing an assessment of management protocols may incentivize land managers to adopt best practices, resulting in better outcomes for biodiversity, climate change mitigation, and environmental justice across all projects. Finally, it would preserve the credibility of the ATB Initiative and facilitate future conservation efforts by transparently disclosing the goals and outcomes of projects included within the ATB Initiative.

271. ATB, 90-Day Report, *supra* note 23, at 10 ("This challenge is the first ever national goal for the stewardship of nature in America.").

NATIONAL INSECURITY: REGULATING THE DEPARTMENT OF DEFENSE'S GREENHOUSE GAS EMISSIONS THAT THREATEN ITS OWN MISSION READINESS AND BEYOND

Evan Allen*

ABSTRACT

The U.S. Department of Defense ("DOD") is the largest consumer of fossil fuels in the world and contributes significantly to U.S. greenhouse gas emissions. However, the Clean Air Act ("CAA"), which regulates emissions in the United States, does not apply to DOD emissions at any of the numerous overseas military installations around the world. Further, it contains exemptions for military vehicles and aircraft, thus DOD is allowed to pollute unregulated. These emissions are a significant factor in global climate change, which DOD has recognized will have dire consequences for military operations around the world. In order to mitigate these effects, regulation of DOD emissions is needed. This Note examines the regulations governing greenhouse gas emissions from DOD, their development over time, and their current shortfalls. It then proposes addressing this problem by amending the CAA, working within the Act, and congressional action that may limit DOD emissions.

I. Introduction

The role of anthropogenic emissions of greenhouse gases as the largest driver of climate change is accepted with near unanimous consensus in the scientific community.[1] The largest source of greenhouse gases is the burning of fossil fuels, which produces carbon dioxide ("CO_2").[2] And the largest single institutional consumer of fossil fuels is the U.S. Department of Defense ("DOD") in not only the United States,[3] but the entire world.[4] With operations reported to be ongoing in more than 40% of the world's nations,[5] DOD strides the globe and likely has the carbon footprint to match.

Many of the effects of climate change, including an increase in the number and severity of storms, reduced access to water, increased desertification, and potential migration of large groups of people,[6] will have a direct impact on the missions of DOD throughout the world. DOD has acknowledged these effects, with current Sec-

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1. Kyle S. Van Houtan et al., *The Geographic Disparity of Historical Greenhouse Emissions and Projected Climate Change*, 7 Sci. Advances, at 1 (July 14, 2021).
2. *Sources of Greenhouse Gas Emissions*, U.S. Env't Prot. Agency, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions [https://perma.cc/YT7L-U82W] (Aug. 5, 2022).
3. *Comprehensive Annual Energy Data and Sustainability Performance*, U.S. Dep't of Energy, https://ctsedwweb.ee.doe.gov/Annual/Report/ComprehensiveGreenhouseGasGHGInventoriesByAgencyAndFiscalYear.aspx [https://perma.cc/7TUU-HJZC] (June 1, 2022).
4. Constantine Samaras et al., *Energy and the Military: Convergence of Security, Economic, and Environmental Decision-Making*, 26 Energy Strategy Revs., at 3 (2019).
5. *See* Stephanie Savell, United States Counterterrorism Operations 2018-2020 (2021), https://watson.brown.edu/costsofwar/files/cow/imce/papers/2021/US%20Counterterrorism%20Operations%202018-2020%2C%20Costs%20of%20War.pdf [https://perma.cc/SGL5-A7XN].
6. *Climate Change Poses Increasing Risks to Global Stability*, United Nations Framework Convention on Climate Change (Feb. 21, 2017), https://unfccc.int/news/climate-change-poses-increasing-risks-to-global-stability [https://perma.cc/FU87-EBVE] [hereinafter UNFCCC].

retary of Defense Lloyd Austin saying climate change "deserve[s] to be called existential," and that it is "making the world more unsafe and we need to act."[7] Former Secretaries of Defense Chuck Hagel and James Mattis have called climate change a "threat multiplier"[8] and stated that it "is impacting stability in areas of the world where our troops are operating."[9] This increased awareness of the risks of climate change, however, has done little to change Department policy or curb DOD's appetite for fuels, with purchases of petroleum products remaining relatively constant above 100 million barrels per year from 1998 to 2018.[10]

Currently, regulation of greenhouse gases is accomplished domestically through application of the Clean Air Act ("CAA" or "the Act"). Under the CAA, standard-setting, implementation, and enforcement roles are divided among the U.S. Environmental Protection Agency ("EPA") and the states and territories in which it applies.[11] This Note will explore the shortcomings of the CAA when it comes to addressing military greenhouse gas emissions, including the Act's failure to regulate DOD emissions from sites outside the United States and numerous exemptions for military and national security activities. It will then examine the regulatory mechanisms which may be used to control these emissions more effectively, offering both a technology-based approach under section 111 of the Act, which implements the "best system of emissions reductions" at new and existing sources,[12] and an ambient-quality-based approach under section 115, which has a reciprocal application between nations whose air quality affects one another.[13]

II. Factual Background

A. DOD's Impact on Climate Change

As America's largest government agency and the employer of over 2.91 million service members and civilians,[14] DOD carries out worldwide operations on an enormous scale. With an estimated defense budget of $778 billion for 2020, the United States' spending on defense is nearly 40% of defense spending worldwide.[15] Maintaining operations of this size requires no small amount of energy, and DOD has accounted for roughly 80% of all government energy usage since 2001.[16] This energy usage culminated in the purchase of 77.6 million barrels of oil by DOD in fiscal year 2020 alone.[17] Calculating the exact amount of CO_2 released by DOD consuming this amount of fuel is difficult as DOD is not required to report greenhouse gas emissions.[18] However, the U.S. Department of Energy ("DOE") estimates 51.9 million metric tons of equivalent CO_2 were emitted by DOD in 2020.[19] This total means that DOD accounts for roughly 76% of total government emissions for 2020.[20] It also means DOD is a major emitter on the world stage, emitting about 30% of the fossil fuel emissions of the entire state of New York,[21] and even exceeding the emissions of Sweden and Bulgaria combined.[22] It is clear, then, that DOD contributes to the global problem of climate change in a major way.

B. Climate Change Impacts on DOD

As noted in the Introduction, prominent military leaders have acknowledged the likely threat to DOD opera-

7. David Vergun, *Defense Secretary Calls Climate Change an Existential Threat*, U.S. Dep't of Def. (Apr. 22, 2021), https://www.defense.gov/News/News-Stories/Article/Article/2582051/defense-secretary-calls-climate-change-an-existential-threat/ [https://perma.cc/KU9C-QXFD].
8. Chuck Hagel, Sec'y of Def., Speech at the Conference of Defense Ministers of the Americas (Oct. 13, 2014) (transcript available at https://www.defense.gov/News/Speeches/Speech/Article/605617/ [https://perma.cc/5QW2-23X3]).
9. Andrew Revkin, *Trump's Defense Secretary Cites Climate Change as National Security Challenge*, ProPublica (Mar. 14, 2017, 11:17 AM), https://www.propublica.org/article/trumps-defense-secretary-cites-climate-change-national-security-challenge [https://perma.cc/N6AM-G48P].
10. Neta C. Crawford, Brown U. Watson Inst.: Costs of War, Pentagon Fuel Use, Climate Change, and the Costs of War 10 (Nov. 13, 2019), https://watson.brown.edu/costsofwar/files/cow/imce/papers/Pentagon%20Fuel%20Use%2C%20Climate%20Change%20and%20the%20Costs%20of%20War%20Revised%20November%202019%20Crawford.pdf [https://perma.cc/96JL-4AWB]. This is analysis of Defense Logistics Agency data over the given period to map fuel purchases, which is used to estimate fuel consumption as DOD consumption is not reported. DOD averaged a purchase of approximately 120 million barrels of fuel per year over the period. *Id.*
11. *See* Clean Air Act, 42 U.S.C. §§ 7409 (national ambient air quality standards), 7410 (state implementation plans for national primary and secondary ambient air quality standards), 7413 (federal enforcement), 7416 (retention of state authority).
12. 42 U.S.C. § 7411(h)(1).
13. 42 U.S.C. § 7415(c).
14. *About*, U.S. Dep't of Def., https://www.defense.gov/About/ [https://perma.cc/3J75-WRQ8] (last visited Nov. 20, 2021).
15. *World Military Spending Rises to Almost $2 Trillion in 2020*, Stockholm Int'l Peace Rsch. Inst. (Apr. 26, 2021), https://www.sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020 [https://perma.cc/BFP3-WEGR].
16. Crawford, *supra* note 10, at 4.
17. Off. of the Under Sec'y of Def. for Acquisition & Sustainment, Fiscal Year 2020 Operational Energy Annual Report 11 (2020), https://www.acq.osd.mil/eie/Downloads/OE/FY20%20OE%20Annual%20Report.pdf [https://perma.cc/PW44-Z7AW].
18. *See* Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, Pub. L. No. 105-261, § 1232, 112 Stat. 2155–56 (1998) (prohibiting application of the Kyoto Protocol to DOD operations, training, and equipment); *see also* Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104 (providing neither an explicit requirement nor exemption for the reporting of military emissions).
19. *Comprehensive Annual Energy Data and Sustainability Performance*, *supra* note 3 (this total includes emissions from standard operations, non-standard operations—military, law enforcement, and other—and biogenic emissions. Because DOD does not report emissions, these numbers are estimated by DOE based on expected fuel consumption).
20. *See id.*
21. *Energy-Related CO_2 Emission Data Tables*, U.S. Energy Info. Admin. (Oct. 11, 2022), https://www.eia.gov/environment/emissions/state/ [https://perma.cc/YSF9-S6PM] (2018 EIA data shows New York greenhouse gas emissions to be 175.1 million tons of CO_2 equivalent).
22. *Historical GHG Emissions*, ClimateWatch, https://www.climatewatchdata.org/ghg-emissions?end_year=2018&regions=EUU&start_year=1990 [https://perma.cc/4YMS-8ASC] (last visited Nov. 14, 2021) (most recent data showing that in 2018, Sweden emitted 30.88 million tons of CO_2 equivalent, and Bulgaria emitted 19.42 million tons).

tions worldwide that climate change presents.[23] These threats will take several forms, but the most significant is expected to be increased instability around the world as competition over dwindling resources leads to conflicts.[24] For example, experts believe that climate change played a role in the 2011 Syrian civil war.[25] Hotter temperatures led to the worst droughts in the region's history from 2006-2011, adding a crippling food shortage to existing crises and creating conditions primed for violent conflict.[26] The incursion of Islamic State fighters into the resulting chaos created a new battlefield for DOD.[27]

Given the number of regions DOD operates in worldwide, as well as the historic willingness of the United States to intervene in global conflict, climate change is likely to cause a spike in U.S. military operations.[28] As climate change worsens, there may be more situations similar to what occurred in Syria in 2011. An increase in military operations would cause an increase in military emissions, further perpetuating the feedback loop.

Climate change is also expected to harm military operations at home. Data shows that increased numbers of extreme weather events and shifting biomes, caused by climate change, may threaten military infrastructure.[29] Rising sea level may also put militarily dense areas like Hampton Roads, Virginia, at risk of increased flooding and erosion.[30] Hampton Roads has already seen dramatic sea-level rise, and is one of the areas of the country most at risk from future increased sea levels.[31] Reducing DOD greenhouse gas emissions and climate change mitigation therefore represents a significant potential benefit for DOD itself, including preventing billions in damage to its at-risk facilities.[32]

III. Legal Background

A. Greenhouse Gas Regulation Under the CAA

Regulation of greenhouse gas emissions at the federal level has never been addressed directly by enacting legislation, with current controls existing solely under the 1970 CAA.[33] The drafters of the CAA did not originally envision greenhouse gases as pollutants that must be regulated, but the Act evolved to do so years after its creation.[34]

1. Evolution of Regulations

With the majority of major environmental legislation in the United States passed years before the world realized the dangers of climate change, proper regulation of greenhouse gases requires an expansion of laws drafted for other purposes. In 2007, *Massachusetts v. EPA* was the major case that shifted EPA's rulemaking authority to encompass greenhouse gases.[35]

Prior to *Massachusetts*, EPA had refused to initiate rulemaking regarding the regulation of four greenhouse gases, including CO_2, as "pollutants" under section 202(a)(1)[36] of the CAA.[37] Finding special standing allowances were appropriate for Massachusetts[38] in its challenge to EPA's rulemaking refusal, the U.S. Supreme Court held that the rise in sea level caused by climate change presented a risk to the state's coastline.[39] Justice John Paul Stevens' opinion noted that "greenhouse gases fit well within the CAA's capacious definition of 'air pollutant,'" and that EPA had the necessary authority to regulate tailpipe emissions from new motor vehicles.[40]

After *Massachusetts*, EPA's mandate to regulate greenhouse gases as "pollutants" under the CAA threatened to significantly increase the number of permits issued by EPA, causing the Agency to promulgate the "Tailoring Rule" in 2010.[41] This rule altered the threshold for what facilities would be considered a "major source" of greenhouse emissions,[42] which would then trigger a permitting requirement under either Title V or the Prevention of Significant Deterioration ("PSD")[43] provisions of the CAA.[44] EPA, using the Tailoring Rule, may therefore require per-

23. *See* Revkin, *supra* note 9.
24. *See* UNFCCC, *supra* note 6.
25. Mark Fischetti, *Climate Change Hastened Syria's Civil War*, Sci. Am. (Mar. 2, 2015), https://www.scientificamerican.com/article/climate-change-hastened-the-syrian-war/ [https://perma.cc/DSM3-KL7W].
26. *Id.*
27. Jim Sciutto, *U.S. Airstrikes Hit ISIS Inside Syria for First Time*, CNN World (Sept. 23, 2014, 4:11 PM) https://www.cnn.com/2014/09/22/world/meast/u-s-airstrikes-isis-syria/ [https://perma.cc/377B-6CHA] (describing the first steps in U.S. intervention in Syria, which is ongoing at the time of this writing).
28. *See* UNFCCC, *supra* note 6.
29. Marc Kodack, *Biome Shifts Due to Climate Change Creates Increased Vulnerabilities for Military Institutions*, The Ctr. for Climate & Sec. (Dec. 28, 2020), https://climateandsecurity.org/2020/12/biome-shifts-due-to-climate-change-creates-increased-vulnerabilities-for-military-installations/ [https://perma.cc/GR7B-ZJ32].
30. C. Todd Lopez, *DOD, Navy Confront Climate Change Challenges in Southern Virginia*, DOD News (July 21, 2021), https://www.defense.gov/News/News-Stories/Article/Article/2703096/dod-navy-confront-climate-change-challenges-in-southern-virginia/ [https://perma.cc/PUV2-JH9S].
31. *Virginia's Sea Level Is Rising*, Sea Level Rise, https://sealevelrise.org/states/virginia/ [https://perma.cc/ASV4-FMML] (last visited Oct. 16, 2022).
32. *Id.*
33. 42 U.S.C. §§ 7401-7671q; Howard M. Crystal et al., *Returning to Clean Air Act Fundamentals: A Renewed Call to Regulate Greenhouse Gases Under the National Ambient Air Quality Standards (NAAQS) Program*, 31 Geo. Env't L. Rev. 233, 242 (2019).
34. *See Clean Air Act Permitting for Greenhouse Gases*, U.S. Envt'l Prot. Agency https://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases [https://perma.cc/HX2B-ESTK] (Dec. 28, 2021).
35. *See* Massachusetts v. Env't Prot. Agency, 549 U.S. 497 (2007).
36. *See* 42 U.S.C. § 7521 (section 202 of the Act requires the EPA Administrator to create and revise standards for air pollutants from new motor vehicles "which may reasonably be anticipated to endanger the public health or welfare").
37. *See* Massachusetts v. Env't Prot. Agency, 549 U.S. at 511–12.
38. *Id.* at 498.
39. *Id.* at 499.
40. *Id.* at 500.
41. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516–17 (June 3, 2010).
42. *See id.* (the Tailoring Rule avoided regulating what EPA considered small emitters by only applying regulations to facilities that emit more than 100,000 tons of CO_2 equivalent annually or increase emissions from the prior year by 75,000 tons CO_2 equivalent).
43. *See* 42 U.S.C. § 7407 (EPA identifies states as either PSD regions (meeting ambient air quality standards) or nonattainment regions (not meeting the standards). Major sources require permits, and permitting conditions vary based on the region the source is located in being either a nonattainment area, referred to as a Title V region, or a PSD region).
44. 75 Fed. Reg. 31,514.

mits for facilities that exceeded the applicable limits for greenhouse gases.[45]

2. Current Status of Regulations

In 2014, the Supreme Court pared down EPA's authority to regulate greenhouse gases under the CAA in *Utility Air Regulatory Group v. EPA*.[46] The CAA, the Supreme Court held, did not compel EPA to subject new major sources to the permitting provisions of the Title V or PSD requirements.[47] Rather than using the definition of greenhouse gases as "pollutants" for all relevant portions of the Act, EPA must use a "narrower, context-appropriate meaning" of the term pollutant.[48]

Therefore, under the current understanding of the CAA, EPA has the authority to regulate greenhouse gases from major sources.[49] However, the emission of greenhouse gases alone is not sufficient grounds to apply the Title V or PSD provisions; the source must emit one of several "criteria pollutants" that requires application of those provisions.[50] If a source is subject to Title V or PSD requirements because of these criteria pollutant emissions, EPA may then regulate greenhouse gas emissions from the source.[51] This would apply to a major source at a DOD facility constructed inside the United States.[52] For example, a coal-fired power plant on a military base would emit sulfur dioxide (SO_2), a criteria pollutant, and therefore would be brought under EPA's regulatory umbrella and subject to greenhouse gas regulation as well.

These requirements, however, do not apply to DOD emissions sources constructed overseas. Absent express agreement between the host nation and the United States, the applicable environmental law is limited to DOD policy and a non-enforceable executive order mandating governmentwide compliance with all applicable environmental laws.[53] To limit DOD emissions and make the Department's actions match its rhetoric regarding climate change, more is needed.

IV. Shortfalls of Existing Greenhouse Gas Regulation

A. *Domestic Exemptions*

Major stationary sources at domestic military bases, including energy generation plants and industrial activities carried out under the supervision of DOD are subject to permitting requirements under the CAA, which vary based on the PSD or nonattainment status of the region in which they are located.[54] A military installation may be determined to be a single source for purposes of grouping emissions.[55] This brings DOD facilities inside the United States firmly within the scope of EPA and applicable state regulation.[56]

There are nevertheless numerous emissions exemptions, loopholes, and special considerations for DOD operations domestically. The CAA governs tailpipe emissions from vehicles under section 7521.[57] This section is broadly inapplicable to any military or national security vehicles, exempting any vehicle "exhibiting substantial features ordinarily associated with military combat such as armor."[58] A recent rule issued by EPA detailing greenhouse gas standards for airplanes and airplane engines, major emitters of greenhouse gases, does not apply to military vehicles.[59]

While DOD has issued statements speaking to the dangers of climate change, it continues to enjoy relaxed standards at home. Since 2003, DOD has requested further exemptions from compliance with environmental laws including the Solid Waste Disposal Act ("SDWA"), CAA, and the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") in the name of military readiness.[60] These exemptions are but a few examples that serve to demonstrate that DOD will not voluntarily act in a responsible way regarding the environment without a change in perspective. Environmental stewardship has not driven DOD policy in the past and is unlikely to do so in the future. Military readiness and ability to complete the mission are the alpha and omega for DOD, and framing unregulated emissions and climate change as a threat to military readiness is the most effective way to influence DOD action.

45. *See id.*
46. Util. Air Regul. Grp. v. Env't Prot. Agency, 573 U.S. 302, 316 (2014).
47. *Id.*
48. *Id.* (directing EPA to first identify another qualifying pollutant from a source before it may regulate greenhouse gases from that source).
49. *Id.* at 310–11.
50. *Id.* at 308 (there are currently six of these criteria pollutant standards promulgated by the Administrator using authority under § 7408 of the Act: ground-level ozone, particulate matter ("PM"), carbon monoxide, lead, sulfur dioxide ("SO_2"), and nitrogen dioxide); 42 U.S.C. § 7408 (air quality criteria and control techniques).
51. *See Util. Air Regul. Grp.*, 573 U.S. at 308.
52. *See* 42 U.S.C. § 7407; 42 U.S.C. § 7411 (there is no exemption from the PSD/nonattainment provisions of the CAA for DOD facilities located in the United States.).
53. Exec. Order No. 12,088, 43 Fed. Reg. 47,707 (Oct. 13, 1978).
54. John Seitz, Off. of Air Quality Planning & Standards, Major Source Determinations for Military Installations Under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act 2 (1996).
55. *Id.* at 3–4.
56. *Id.* at 2.
57. 42 U.S.C. § 7521.
58. 40 C.F.R. § 89.908(a)(1).
59. Control of Air Pollution From Airplanes and Airplane Engines: GHG Emission Standards and Test Procedures, 86 Fed. Reg. 2,136, 2,138 (Jan. 11, 2021) (to be codified at 40 C.F.R. pts. 87, 1030); 40 C.F.R. § 87.
60. David M. Bearden, Cong. Rsch. Serv., RS22149, Exemptions From Environmental Law for the Department of Defense: Background and Issues for Congress 1 (May 15, 2007).

B. *International Applicability*

The extraterritorial applications of most U.S. environmental laws are extremely limited, and this is also true of the CAA.[61] Only one provision of the CAA suggests applicability internationally: the "Reciprocity Clause" in section 115.[62] This section has never been used to address climate change and was only used once to address acid rain problems over the U.S.-Canadian border.[63] Section 115 is also subject to important limitations, which will be discussed in detail below. The CAA was never designed to address climate change,[64] and thus using it to regulate such a complex global phenomenon could be difficult.

Without expanding the scope of the CAA, DOD operations abroad will continue to be subject only to a patchwork of regulations governing the countries in which DOD operates.[65] For example, there are over 100,000 military members, dependents, and contractors stationed in Japan.[66] The applicable "Air and Toxics" standards promulgated by the base commander are based on Japanese law, do not apply to greenhouse gas emissions, and exempt any military vehicles and aircraft from any emissions requirements.[67] Considering the number and variety of areas in which DOD operates, a lack of uniform regulation may subject some DOD operations to even less stringent requirements than those in Japan.

Major international agreements have also historically exempted military operations, including both the Kyoto Protocol[68] and the more recent Paris Climate Agreement ("Paris Agreement").[69] The Paris Agreement does not contain an explicit carveout for military emissions reporting like the Kyoto Protocol does, instead requiring that each party regularly provide an inventory of "anthropogenic emissions by sources and removals by sinks of greenhouse gases."[70] The Paris Agreement fails to make any mention of military emissions and does not require their reporting or reduction.[71] Despite being an important piece of international climate change policy, the Paris Agreement is woefully inadequate regarding military emissions.

V. Proposed Solutions

A. *Extension of the CAA's New Source Performance Standards*

The CAA is a lengthy and complicated piece of legislation, consisting of varied approaches to the difficult task of regulating air quality. Two of the most significant regulatory approaches in the CAA are an ambient-quality-based approach and a technology-based approach.[72] Due to the unique situations and locations in which DOD operates globally, a technology-based approach to regulation is preferable.

Ambient-quality-based regulation works by assigning a total limit to a region based on the environmental and health effects of pollutants at that limit.[73] EPA then requires the region to maintain its total emissions be below that limit.[74] This makes sense when regions are easily selected, such as by using state lines. DOD, however, does not operate within neat boundaries, and has operations spanning the planet.[75] Air quality at Al Anad Air Base in Yemen is likely to be drastically different from the air quality at Ramstein Air Base in Germany.[76] In order to use ambientquality-based regulations, a logical method of creating regions is by using a single combatant command such as CENTCOM.[77] This is unfortunately still a very large area of the world, and ambient-quality-based regulation is likely only possible by treating each DOD installation or base as a region and setting standards for that base. EPA must then set standards for each base, a significant administrative burden.

Technology-based regulation under the CAA does not depend on separating the regulated areas into convenient groups or creating ambient standards for a variety of small regions. Under section 111 of the CAA, EPA has the authority to develop technology-based standards that apply to a class of stationary sources and set maximum emissions levels equivalent to the application of the "best system of

61. *See generally* Jonathan Remy Nash, *The Curious Legal Landscape of the Extraterritoriality of U.S. Environmental Laws*, 50 Va. J. Int'l L. 997, 1004 (2009).
62. 42 U.S.C. § 7415.
63. *See generally* Her Majesty the Queen in Right of Ontario v. Env't Prot. Agency, 912 F.2d 1525, 1525–26 (D.C. Cir. 1990).
64. 42 U.S.C. § 7401 (not referencing climate change as a purpose of the CAA).
65. *See* Nash, *supra* note 61. Because U.S. environmental laws do not apply outside of U.S. territories, foreign sites are subject to applicable foreign laws.
66. Guidance From the Commander, U.S. Forces Japan: About USFJ, https://www.usfj.mil/About-USFJ/ [https://perma.cc/Y5QP-U639] (last visited Jan. 17, 2022).
67. *See* Dep't of Def., Japan Environmental Governing Standards 1–2 (Apr. 2022), https://www.usfj.mil/Portals/80/Documents/2022%20JEGS.pdf?ver=8IK9DQfnpthBttbIqAppEw%3D%3D [https://perma.cc/62SX-V8NS].
68. *See* Pub. L. No. 105-261, 112 Stat. 1920 § 1232 (prohibiting application of the Kyoto Protocol to Defense Department operations, training, and equipment. The Kyoto Protocol is an international treaty designed to address greenhouse gas emissions globally that is a part of the United Nations Framework Convention on Climate Change ("UNFCCC"), beginning in 1992).
69. *See generally* T.I.A.S. No. 16-1104, which provides neither an explicit requirement nor exemption for the reporting of military emissions. The Paris Agreement is another UNFCCC treaty from 2015. *Id.* These treaties set goals for Member States to meet over time to minimize global greenhouse gas emissions. *Id.*
70. *See id.* at 17.
71. *Id.*
72. U.S. Env't Prot. Agency, The Clean Air Act in a Nutshell: How It Works 3, 9 (2013).
73. *See* 42 U.S.C. § 7409.
74. *Id.*
75. Savell, *supra* note 5, at 7–8.
76. David Vine, *List of Military Bases Abroad, 2017*, https://dra.american.edu/islandora/object/auislandora%3A55678 [https://perma.cc/TQ8M-QD92] (May 14, 2017). Al Anad is located in a desert region of southern Yemen, while Ramstein is in a densely forested region of Germany. *See id.*
77. *See generally* U.S. Cent. Command, https://www.centcom.mil/ [https://perma.cc/KA2T-JZ5X] (last visited Apr. 10, 2022). CENTCOM, or United States Central Command, is a "unified combatant command," a regional grouping used by DOD to broadly divide the Earth into six areas of responsibility and put a particular area of operations under a single command structure. CENTCOM consists mostly of the Middle East and parts of East Asia. *See id.*

emissions reduction."[78] EPA has done so with approximately 90 types of stationary sources by promulgating New Source Performance Standards ("NSPS"),[79] which include a variety of sources such as wool fiberglass insulation factories, petroleum refineries, and nitric acid plants.[80] These regulations also apply to electric power generation facilities using fossil fuels.[81]

1. Applying NSPS: Reporting

A necessary first step in subjecting overseas DOD facilities to the technology-based NSPS is reporting of those facilities' emissions to EPA. Understandably, it would be impossible to take any corrective action before understanding the scope of the problem. Possibly believing this to be the case, the 2021 National Defense Authorization Act ("NDAA") addressed this deficiency.[82] At an impressive 740 billion dollars, the NDAA contains a requirement for the Secretary of Defense to submit a report on the total emissions broken down by department to the U.S. House of Representatives and U.S. Senate Committees on Armed Services.[83] Unlike this general provision, a new and more specific reporting requirement that provides sufficient data to EPA should be incorporated into the next NDAA.

As it stands, compliance with this provision only allows for measuring of general trends of greenhouse emissions within DOD.[84] These trends are more likely to be impacted by larger operational shifts such as a base closure than emissions requirements at individual sources, and therefore more specific information will have to be gathered and reported by DOD. Unfortunately, even compliance with this provision is not a given. The deadline for this 10-year emissions report, July 2021, has come and gone with little fanfare; DOD has taken no action, offered no explanation as to its noncompliance, and has not been penalized.[85] This is more evidence that although DOD purports to understand the risks of climate change, it will not act of its own accord.

Reporting emissions is not completely without risk, as a detailed inventory of source emissions could potentially be used by foreign adversaries to estimate troop strength or operations in a particular area.[86] This Note's proposed reporting would mitigate this concern in two main ways. First, NSPS apply to major stationary sources[87]; a report detailing these emissions would only allow for estimation of how many of these sources, for example, electric generation facilities, are operating and in what region. This would be separate from any reporting on specific numbers of aircraft or ground vehicles and their miles traveled over a given span, which is much less potentially damaging.

Second, reporting risk should be minimized by cabining the reports themselves. There is certainly value in shining a light on the emissions for the public to see, but restricting the reports to the parties responsible for regulation such as EPA and the House and Senate Armed Forces Committees greatly reduces any potential risks. The 2021 NDAA seems to recognize this concern, allowing the Secretary of Defense to submit the last 10 years of emissions via an "unclassified form, but may contain a classified annex."[88] By limiting the reporting to major sources and restricting access to these reports, any risks to operational security are likely de minimis. Cabining reports in this way would hamper the ability of citizens to bring suits for noncompliance under the CAA's citizen suit provision,[89] but doing so may be necessary to assuage the national security concerns implicated here.

Because the risks to operational security from reporting can be effectively mitigated, a more detailed but carefully cabined reporting requirement should be part of the next NDAA. As always, there is a strong possibility that DOD may refuse to comply, but by attaching funds to reporting requirements, compliance becomes more likely.[90] This can either be done negatively—by withholding funds until compliance—or positively, with incentive funding for compliance.

2. Applying NSPS: Expanding Scope

Under section 111 of the CAA, major stationary sources are subject to technology-based controls in the form of Best System of Emission Reduction ("BSER").[91] This technology is determined by the EPA Administrator, who incorporates factors such as cost to identify the most effective system that has been "adequately demonstrated."[92] The currently applicable BSER comes from a 2015 EPA rule that uses partial carbon capture technology in electric generating facilities.[93] EPA had subsequently issued a new

78. 42 U.S.C. § 7411(a), (f).
79. *See* 40 C.F.R. § 60 (1971).
80. *See id.* at §§ 60.70–74 (Subpart G—Standards of Performance for Nitric Acid Plants), 60.680–85 (Subpart PPP—Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants), 60.690–99 (Subpart QQQ—Petroleum Refinery Wastewater System).
81. *See id.* at §§ 60.330–35 (Subpart GG—Standards of Performance for Stationary Gas Turbines), 60.720–26 (Subpart TTT—Standards of Performance for Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines) (some types of generation are handled under a specific subsection, such as stationary gas turbines under Subpart GG, and GHG standards for all electric utility generating units are listed under Subpart TTTT).
82. William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, § 328(a), 134 Stat. 3527. The NDAA is a defense spending bill that is passed annually and provides funding and conditions for the DOD budget for each year.
83. *Id.*
84. *Id.* This section does not require a breakdown of emissions by region, facility, or source, requiring only reporting separated by department and installation versus operational emissions.
85. Zachary Basu, *Exclusive: Rep. Barbara Lee Calls on Pentagon to Release Delayed Emissions Report*, Axios (Nov. 3, 2021), https://www.axios.com/pentagon-emissions-climate-change-barbara-lee-4f66b86f-d7f6-4e4d-9436-e08a2803083c.html [https://perma.cc/A2RX-46YD].
86. For example, if regions were small enough, foreign adversaries could compare emissions between regions in public emissions reports and use that data to estimate relative troop military presence in the regions.
87. 42 U.S.C. § 7411(f).
88. William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, § 328(b), 134 Stat. 3527.
89. *See* 42 U.S.C. § 7604(a).
90. *See* Basu, *supra* note 85.
91. 42 U.S.C. § 7411(a)(1).
92. *Id.*
93. 80 Fed. Reg. 64,509, 64,513 (Oct. 23, 2015).

rule controlling standards at power plants,[94] which was promptly challenged; the U.S. Court of Appeals for the District of Columbia ("D.C.") Circuit, however, granted EPA's request to vacate the rule and allowed EPA to rewrite it.[95] A new rule has not yet been issued, leaving the 2015 rule as the standard.

EPA's process in determining and applying a new BSER is lengthy and complicated. EPA must conduct monitoring and on-site evaluations, ascertain the effectiveness and costs of a given technology, and then attempt to implement that technology through notice-and-comment rulemaking.[96] Luckily, no new BSER is required for this proposal.

Major sources used by DOD, most notably electric generating units such as natural gas power plants, are already listed as categories of major sources with applicable NSPS.[97] Bringing DOD in line with the rest of the country would not require special considerations of the technology-based standards; it would require an expanded scope of the CAA itself. This would be solved by an amendment to the Act that requires that new major stationary sources built by DOD—or by contractors for military use—overseas would be subject to EPA's greenhouse gas regulations already in place domestically.[98] All air pollution, especially greenhouse gases, are not subject to national borders and the United States must regulate all greenhouse emissions within its power to combat climate change.

The proposed amendment here would be a new subsection to section 111(b) of the Act. To apply existing regulations to DOD, the amendment could be as simple as "the requirements of this section apply to sources constructed or operated by the United States which are located outside of the United States." DOD may resist forced changes to how it conducts operations abroad. However, as climate change represents a more dangerous threat to DOD operations than these proposed regulations,[99] DOD should embrace this amendment as a way of combating the destabilizing effects that climate change has around the world.

94. Pollutant-Specific Contribution Finding for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, and Process for Determining Significance of Other New Source Performance Standards Source Categories, 86 Fed. Reg. 2,542, 2,542–43 (Mar. 15, 2021) (this new rule would only allow application of NSPS to categories of sources that "contribute significantly" to air pollution by exceeding 3% of total U.S. greenhouse emissions as a category. Electric generating units as a category continue to contribute greater than 3% toward national emissions and would therefore continue to be regulated under the proposed rule).
95. *See* California v. Env't Prot. Agency, No. 21-1035 (D.C. Cir. Apr. 5, 2021) (granting EPA's motion for voluntary vacatur and remand for the March 2021 proposed rule).
96. 40 C.F.R. § 60.22(a).
97. 40 C.F.R. § 60.5360.
98. At the time of this writing, EPA's authority to regulate greenhouse gas emissions under section 111 of the CAA has been broadly challenged in *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021), *cert. granted sub nom.* N. Am. Coal Corp. v. Env't Prot. Agency, 142 S. Ct. 417 (2021), and *cert. granted sub nom.* North Dakota v. Env't Prot. Agency, 142 S. Ct. 418 (2021), and *cert. granted in part sub nom.* Westmoreland Mining Holdings LLC v. Env't Prot. Agency, 142 S. Ct. 418 (2021), and *rev'd and remanded sub nom.* West Virginia v. Env't Prot. Agency, 142 S. Ct. 2587 (2022) (because the outcome of that case is as of yet uncertain and the regulation of new sources under section 111(b) has not been challenged, this proposal focuses on the regulation of new sources under section 111(b) of the Act).
99. *See* UNFCCC, *supra* note 6.

3. Applying NSPS: Permitting and Enforcement

Major differences between overseas and domestic facilities used by DOD must be accounted for, including the roles of permitting and enforcement. This stems from the fact that DOD operations around the world do not take place in a state. Normally, the state in which a facility is located issues the applicable PSD or nonattainment area NSPS permits under the CAA.[100] However, there are several situations in which the state does not do so, including when states have neglected to fix errors assigned by EPA to a state permitting program, on certain Native American lands, as well as some overseas territories of the United States.[101]

Because permitting and enforcement authority originates with EPA and not the states, an expansion in the scope of applicability for the CAA through this proposed amendment would provide EPA a corresponding scope in authority.[102] Section 7411(c) of the Act states that the EPA Administrator may delegate permitting authority but ultimately retains authority to enforce performance standards.[103] EPA would therefore issue permits when appropriate to DOD facilities operating overseas in much the same way as would be done on U.S. territories or tribal lands that have not been delegated permitting authority.[104]

Because much of the CAA is designed to be ultimately delegated to states rather than remaining in the hands of EPA, overseeing permitting and enforcement duties for the DOD's worldwide operations would be very resource-intensive and a drain on the Agency.[105] It may be argued that it is more efficient to delegate this authority from EPA to a specific agency or division within DOD itself and ultimately allow the Department to issue its own permits in the same manner as a state.[106] This approach does raise concerns given DOD's refusal to comply with existing environmental law,[107] but it may be necessary if the regulatory burden on EPA is too great for the Agency to handle. Ideally, an increase in EPA's responsibilities here would be accompanied by an increase in EPA resources.

B. Reduction in Existing Exemptions

Regulation of emissions from DOD facilities is critical, but it is not the whole picture. DOD's vehicles in the air, on land, and on the sea use tremendous amounts of fuel to support its operations. DOD consumes the vast majority of diesel fuel used by the federal government and a significant portion of its gasoline.[108] It also consumes nearly all of the federal government's jet fuel, totaling about 400 trillion

100. *See* 42 U.S.C. § 7411(c)(1).
101. 42 U.S.C. § 7411(d); *see also EPA Issued Operating Permits*, U.S. Env't Prot. Agency, https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits [https://perma.cc/Q8RH-WFJV] (June 16, 2022).
102. *See* 42 U.S.C. § 7411(c).
103. *See id.*
104. *See* 40 C.F.R. § 62.02(b)(1) (1978) (explaining EPA retention of section 111 authority in cases where the state lacks an approved plan).
105. 42 U.S.C. § 7411(c) (announcing the delegation of CAA enforcement authority to the states).
106. 42 U.S.C. § 7411(d)(1).
107. *See* Basu, *supra* note 85.
108. Crawford, *supra* note 10, at 4.

BTUs worth of jet fuel in 2016.[109] Assuming DOD uses mostly standard jet fuel, this amounts to over 159,000,000 pounds of CO_2 from a single department's jet fuel use in a single year.[110] Because of the magnitude of these emissions, case-by-case exemptions should be issued after analyzing the defense capabilities of vehicles that are non-exempt, comparing them to current exempt vehicles, and only issuing exemptions when mandated by a substantial change in vehicle performance.

DOD is too large to be exempted from emissions regulations for its vehicles and fuel use.[111] Currently, any motor vehicle designed for military use is automatically exempt from emissions controls under the CAA, and non-military vehicles and engines may be exempt if they are endorsed by "an agency of the federal government with responsibility for national defense."[112] There very well may be operational requirements of military vehicles that make compliance with existing EPA tailpipe emissions impossible, but a more tailored approach should be used rather than blanket ones. This is especially important when considering that a "responsibility for national defense" is much broader than just DOD and may apply to the off-road vehicles used by the nearly 20 intelligence agencies tasked with national security.[113]

Likewise, the exemption from any emissions responsibilities for the military under the Paris Agreement fails to meet the moment. After rejoining the Paris Agreement in January 2021,[114] DOD has taken no material action to comply with it and remains focused on adaptation rather than mitigation.[115] The Paris Agreement's goals of mitigating climate change cannot be seriously pursued as a nation by allowing the largest part of the government and largest greenhouse gas emitter[116] to avoid reporting and setting specific emissions targets.[117]

Bringing DOD in line with the goals of the Paris Agreement is an extraordinarily difficult task, and as DOD has traditionally demonstrated resistance to environmental restrictions on its activities,[118] compliance must be demanded from the U.S. Congress. Reducing the defense budget may be a political risk few are willing to take,[119] but this could be done in other ways. A more palatable possible solution may include conditioning additional funds on emissions reporting and setting goals for reduction.

Some members of Congress understand that full DOD compliance is essential for Paris Agreement compliance.[120] In a House Resolution in late 2021, Congresswoman Barbara Lee of California pointed to the significance of DOD emissions and the importance of the Department's cooperation if the Paris Agreement is to be taken seriously.[121] Congresswoman Lee, however, remains in the minority in Congress.[122]

Similar to the political obstacles that would be in the way of a congressional amendment to the CAA, elimination of current exemptions falls prey to congressional inaction and partisan gridlock.[123] Vehicle emission exemptions and Paris Agreement requirements are important pieces of the climate change puzzle, but waiting for congressional action is not a solution. Absent overwhelming public support and pressure on Congress to act and reduce DOD's emissions, the fastest and most realistic solutions may be based in executive action and EPA regulations interpreting the CAA. Working within the CAA may be the best path forward.

C. *Working Within the Current Act: The Section 115 Reciprocity Clause*

Depending on Congress to amend the CAA, which hasn't happened since 1990,[124] is a slow and uncertain approach. With a sharp drop in enacted legislation over the last few terms of Congress,[125] waiting for elected officials to solve the problem may fall short of the urgent needs of the moment to act on climate change. An argument may be made, however, for regulation of DOD emissions using the

109. *Id.* at 5. A British thermal unit ("BTU") is the amount of energy used to raise one pound of water one degree Fahrenheit and is a standard unit for measuring energy.
110. *Carbon Dioxide Emissions Coefficients*, U.S. Energy Info. Admin. (Nov. 18, 2021), https://www.eia.gov/environment/emissions/co2_vol_mass.php [https://perma.cc/XZ3M-GJEH].
111. *See* U.S. Dep't of Def., *supra* note 14.
112. National Security Exemption, 40 C.F.R. § 89.908.
113. *Id.*; *Intelligence Community*, U.S Senate Select Comm. on Intel., https://www.intelligence.senate.gov/resources [https://perma.cc/7ZG8-EHNZ] (last visited Jan. 29, 2022) (currently, 19 agencies are members of the intelligence community per the Senate Select Committee on Intelligence).
114. Press Release, The White House, Paris Climate Agreement (Jan. 20, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/paris-climate-agreement/ [https://perma.cc/AJ2Z-CP4D] (accepting all provisions of the Paris Agreement of 2015 on behalf of the United States).
115. *See generally* U.S. Dep't of Def., Department of Defense Climate Adaptation Plan, (Sept. 1, 2021), https://media.defense.gov/2021/Oct/07/2002869699/-1/-1/0/DEPARTMENT-OF-DEFENSE-CLIMATE-ADAPTATION-PLAN-2.PDF [https://perma.cc/H8YC-8NZJ] (outlining DOD plan to acclimate to the effects of climate change but omitting any commitment to report emissions or set emissions reduction targets).
116. U.S Dep't of Energy, *supra* note 3.
117. *See* T.I.A.S. No. 16-1104 art. 4.
118. *See* Bearden, *supra* note 60, at 2.
119. H.R. 4350, 117th Cong. (as reported by the Clerk of the House, Sept. 23, 2021); H.R 4350, 117th Cong. (as passed by the Senate, Nov. 17, 2021) (the Fiscal Year 2022 National Defense Authorization Act, which was the largest ever and included more funds than DOD had requested, passed 316-113 in the House and 84-15 in the Senate; the bill received broad support from both parties, and political support to reduce the budget is unlikely).
120. *See* Press Release, Barbara Lee, Congresswoman, House of Representatives, Congresswoman Lee Introduces Resolution to Monitor and Reduce Greenhouse Gas Emissions From the U.S. Military (Nov. 3, 2021), https://lee.house.gov/news/press-releases/congresswoman-lee-introduces-resolution-to-monitor-and-reduce-greenhouse-gas-emissions-from-the-us-military [https://perma.cc/2FK4-EVZQ].
121. *Id.*
122. *Id.* Congresswoman Lee was only joined by 19 other congresspeople on this resolution.
123. DOD Clean Energy Act, S. 4317, 117th Cong. § 4 (2022) (read twice and referred to the Committee on Armed Services without further action); *Statistics and Historical Comparison*, Govtrack, https://www.govtrack.us/congress/bills/statistics [https://perma.cc/5M68-UEE4] (last visited Jan. 29, 2022).
124. 42 U.S.C. § 7401.
125. *Statistics and Historical Comparison*, Govtrack, https://www.govtrack.us/congress/bills/statistics [https://perma.cc/5M68-UEE4] (last visited Jan. 29, 2022). Since 2010, Congress has enacted between 2 and 3% of proposed legislation, a significant decline from the 5 to 6% average during the last few decades.

text of the CAA as it exists today, using what is known as the Reciprocity Clause (the "Clause").[126]

1. Requirements of the Reciprocity Clause

Contained in section 115 of the CAA, titled "International air pollution," the Clause is an oft-overlooked provision that allows the EPA Administrator to act when air pollution from the United States threatens the health and welfare of a foreign country.[127] Because section 115 is designed to work alongside section 110, any use of section 115 to regulate DOD emissions must be done through the use of ambient-quality-based regulation and not technologybased regulation.[128] There are several necessary conditions for section 115 to be used, and this section will address them in turn and explain how the Clause may be used to regulate DOD emissions and fight global climate change.[129]

First, per section C of the Clause, the foreign country must give the United States "essentially the same rights with respect to the prevention or control of air pollution."[130] This may be problematic for DOD installations in certain war-torn regions, but would apply to some of the largest U.S. military bases around the world in countries with air pollution control laws, including Japan and South Korea (over 80,000 active-duty troops),[131] Germany (more than 30,000),[132] Italy (about 12,000),[133] and many others.[134]

Next, the pollutants must "cause or contribute to air pollution which may be reasonably expected to endanger public health or welfare in a foreign country."[135] The global effects of climate change can surely be expected to endanger both health and welfare around the world.[136] Further, there is legal precedent to support this. This same language is used in section 121 of the CAA, which deals with the regulation of emission standards for motor vehicles.[137] In the seminal 2007 case *Massachusetts*, the Supreme Court, in a 5-4 decision, held that CO_2 and other greenhouse gases are encompassed by the term "pollutant" and are therefore subject to EPA regulation under the CAA.[138] Since these are the same pollutants that must be regulated at DOD facilities abroad, this case supports an understanding that would allow for greenhouse gas emissions by DOD to be subject to EPA regulations as well.[139]

Massachusetts also addressed the question of greenhouse gas emissions endangering the public health and welfare.[140] Holding that the state of Massachusetts was deserving of "special solicitude,"[141] the Supreme Court went on to find that Massachusetts' many miles of coastline subjected it to the dangerous effects of sea-level rise as a consequence of greenhouse gas emissions and the resulting increase in global temperatures.[142] Further, the fact that the greenhouse emissions at issue were only a small part of the greater problem was held not to be a reason to exempt regulation.[143]

This part of the holding also supports allowing regulation of DOD's greenhouse gases via the CAA. The threat to Massachusetts is very comparable to threats to many of the regions the DOD operates in, as many of these areas have expansive coastlines including Italy, Japan, and South Korea.[144] It would stand to reason, therefore, that the loss of coastline due to sea-level rise[145] and risk of further loss to these nations' coastlines from greenhouse gas emissions has been established in U.S. law. Although subsequent cases have challenged specific EPA authority regarding greenhouse gas emissions,[146] those cases have not challenged the endangerment finding made by EPA, which remains in effect,[147] nor have they overturned *Massachusetts* directly.

The information detailing these risks to health and welfare must be received by the EPA Administrator from a "duly constituted international agency."[148] Because of the overwhelming scientific agreement on the relationship between greenhouse gas emissions, global mean temperatures, and a rise in sea levels, this provision is no bar to regulation.[149] International agencies such as the United Nations Intergovernmental Panel on Climate Change ("IPCC") could satisfy this requirement and provide the most reliable and up-to-date scientific information to the Administrator.[150]

126. 42 U.S.C. § 7415(c).
127. *Id.*
128. *See* 42 U.S.C. § 7415(b).
129. *See* 42 U.S.C. § 7415.
130. 42 U.S.C. § 7415(c).
131. U.S. Gov't Accountability Off., GAO-21-270, Burden Sharing: Benefits and Costs Associated With the U.S. Military Presence in Japan and South Korea 1 (2021), https://www.gao.gov/products/gao-21-270 [https://perma.cc/M8FM-AKWP].
132. Ben Knight, *US Military in Germany: What You Need to Know*, Deutsche Welle (June 16, 2020), https://www.dw.com/en/us-military-in-germany-what-you-need-to-know/a-49998340 [https://perma.cc/3YA2-HPJJ].
133. Mohammed Hussein & Mohammed Haddad, *Infographic: US Military Presence Around the World*, AlJazeera (Sept. 10, 2021), https://www.aljazeera.com/news/2021/9/10/infographic-us-military-presence-around-the-world-interactive [https://perma.cc/YS5J-2SDZ].
134. *See id.*
135. 42 U.S.C. § 7415.
136. *See generally* Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Fed. Reg. 66,495 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. 1); *see also* Massachusetts v. Env't Prot. Agency, 549 U.S. 497 (2007).
137. 42 U.S.C. § 7521(a)(1).
138. *See Massachusetts*, 549 U.S. at 528–29.
139. *See id.*
140. *See id.* at 497.
141. *Id.* at 520.
142. *Id.* at 499.
143. *Id.* at 497.
144. *See* Hussein & Haddad, *supra* note 133.
145. *See Vital Signs: Sea Level*, Nat'l Aeronautics & Space Admin., https://climate.nasa.gov/vital-signs/sea-level/ [https://perma.cc/JLB9-C2LR] (Sept. 30, 2022) (showing that satellite data reveals a nearly 4-inch increase in sea level from 1993 to 2021).
146. *See, e.g.*, West Virginia v. Env't Prot. Agency, 142 S. Ct. 2587 (2022); Am. Lung Assoc. v. Env't Prot. Agency, 985 F.3d 914, 930 (D.C. Cir. 2021).
147. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Fed. Reg. 66,495 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. 1). The Endangerment Finding issued as a result of the *Massachusetts* case finds that greenhouse gases "endanger both the public health and the public welfare of current and future generations." *Id.*; *see also Massachusetts*, 549 U.S. at 497.
148. 42 U.S.C. § 7415(a).
149. *See, e.g.*, Van Houtan et al., *supra* note 1, at 1, 3–4.
150. *See generally* Courtney Lindwall, *IPCC Climate Change Reports: Why They Matter to Everyone on the Planet*, Nat. Res. Def. Council (July 20, 2022), https://www.nrdc.org/stories/ipcc-climate-change-reports-why-they-matter-everyone-planet [https://perma.cc/T293-5R93] (explaining the role of the IPCC in global climate science).

2. Emitted in the United States

Finally, and most importantly, the Reciprocity Clause applies only to "air pollution or pollutants emitted in the United States."[151] A strict reading of this provision would bar regulation of emissions from locations under control of the United States but not "in the United States."[152] However, a broader reading of this section is more appropriate.

In the criminal context, for example, the United States is defined as including "all places and waters, continental or insular, subject to the jurisdiction of the United States."[153] Military personnel aboard U.S. installations outside of the United States are subject to the Uniform Code of Military Justice ("UCMJ") and may be subject to either U.S. or host nation jurisdiction when not located on the U.S. installation.[154] Likewise, civilians working on military bases abroad are subject to the jurisdiction of the United States district courts for criminal charges.[155] It is logical, therefore, that DOD installations in foreign nations where the United States exercises its jurisdiction and maintains de facto control are legally "the United States" for purposes of criminal jurisdiction and may also be so for EPA jurisdiction.[156]

Existing regulations also support a broad understanding of what areas should be subject to EPA regulation. The CAA was not intended to and does not in fact only regulate emissions from the 50 states, as "state" is defined to include the District of Columbia as well as territories such as American Samoa and Guam.[157] Guam is therefore subject to the various provisions of the CAA and is regulated as part of EPA's Region 9.[158] Thus, the CAA regulates not just those areas that are legal states, but also areas under U.S. control, which should include military bases around the world. This argument is bolstered by the fact that some U.S. military bases have larger populations[159] and have been under continuous U.S. control longer[160] than some U.S. territories.

Ultimately, although some textual canons of statutory interpretation may weigh against an expansive reading of this provision, this is not determinative.[161] After all, the Supreme Court has held the term "person," seemingly a word with a clear and plain meaning, to encompass corporations for the purpose of First Amendment free speech protections.[162] Further, if EPA were to adopt a broad understanding of the phrase "emitted in the United States," it may be entitled to some amount of judicial deference in favor of the Agency's interpretation similar to past EPA interpretations under the CAA.[163] This deference is likely necessary to withstand judicial review in a challenge to EPA's interpretation. Although it may not be a perfect fit, the Reciprocity Clause has the tremendous advantage of being currently enacted law—no congressional amendment or revision is necessary to use it.

3. The Reciprocity Clause in Action

The Reciprocity Clause has never been used to address climate change, likely due to the specific and unusual conditions required for its use, so there is no precedent to point to in order to illustrate how section 115 works in practice. However, its provisions are relatively straightforward,[164] and it is not difficult to imagine what an enforcement action under section 115 would look like.

The section is triggered by a receipt of "reports, surveys or studies from any duly constituted international agency," or a request made by the Secretary of State.[165] As described earlier, greenhouse gas emissions have been held to endanger public health and welfare through sea-level rise, so the requirement that the emissions here endanger public health and welfare is satisfied.[166] This requirement would also be satisfied by a report that particulate matter ("PM"), ("SO_2"), or other criteria pollutants coming from a DOD site are risking the health and welfare of residents of the

151. 42 U.S.C. § 7415(a).
152. *Id.*
153. 18 U.S.C. § 5.
154. *See generally* R. Chuck Mason, Cong. Rsch. Serv., RL34531, Status of Forces Agreement (SOFA): What Is It, and How Has It Been Utilized? 12 (2012).
155. Criminal Jurisdiction Over Civilians Employed by or Accompanying the Armed Forces Outside the United States, Certain Service Members, and Former Service Members, 71 Fed. Reg. 8,947, 8,950 (Feb. 22, 2006) (to be codified at 32 C.F.R. pt. 153).
156. 42 U.S.C. § 7415(a).
157. 42. U.S.C. § 7602(d).
158. *Approved Air Quality Implementation Plans in Guam*, U.S. Env't Prot. Agency, https://www.epa.gov/sips-gu [https://perma.cc/E8KF-8DUB] (Dec. 21, 2021).
159. Press Release, U.S. Census Bureau, Census Bureau Releases 2020 Census Population and Housing Unit Counts for the Commonwealth of the Northern Mariana Islands (Oct. 28, 2021), https://www.census.gov/newsroom/press-releases/2021/2020-census-cnmi.html [https://perma.cc/T9CT-KCN2]; U.S. Gov't Acct. Off., GAO-21-270, Burden Sharing: Benefits and Costs Associated With the U.S. Military Presence in Japan and South Korea 1 (2021), https://www.gao.gov/products/gao-21-270 [https://perma.cc/M8FM-AKWP] (showing a population of 47,329 for 2020 for the Northern Mariana Islands, which are subject to EPA regulation, and about 55,000 U.S. troops stationed in Japan, which are not subject to EPA regulation).
160. *Commonwealth of the Northern Mariana Islands*, U.S. Dep't of the Interior, https://www.doi.gov/oia/islands/cnmi [https://perma.cc/E647-EQYX] (last visited Jan. 27, 2022); *Commander Fleet Activities Yokosuka: History*, U.S. Navy, https://cnrj.cnic.navy.mil/Installations/CFA-Yokosuka/About/History/ [https://perma.cc/PFK5-VKX4] (last visited Jan. 27, 2022); *Naval Station Guantanamo Bay: History*, U.S. Navy, https://cnrse.cnic.navy.mil/Installations/NS-Guantanamo-Bay/About/History/ [https://perma.cc/3H87-CH2C] (last visited Jan. 27, 2022) (the Mariana Islands became a U.S. administered territory in 1947, while the nation's most populous forward-deployed base at Yokosuka has been under U.S. control since 1945, and the United States has been in possession of Guantanamo Bay in Cuba since 1898).
161. For example, the Ordinary Meaning Canon dictates that words are understood by their everyday meaning, and the Extraterritoriality Canon provides that statutes presumptively have no extraterritorial application. *See* Aaron M. Graham, The False Intent-Purpose Distinction in Textualism 4, 25 (May 2017) (M.A. thesis, Univ. of Mississippi).
162. *See* Citizens United v. Fed. Election Comm'n, 558 U.S. 310, 351–56 (2010).
163. *See* Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837 (1984) (granting deference to an EPA determination that the term "stationary source" in the CAA may apply to multiple separate sources within a geographic area or "bubble"); Skidmore v. Swift & Co., 323 U.S. 134, 140 (1944) (holding that agency interpretations may be entitled to deference based on "factors which give [the interpretation] power to persuade, if lacking power to control").
164. *See generally* 42 U.S.C. § 7415.
165. 42 U.S.C. § 7415(a).
166. *See* Massachusetts v. Env't Prot. Agency, 549 U.S. 497 (2007).

host country.[167] After receipt of reports detailing emissions from an agency such as the IPCC, the EPA Administrator will give formal notification to the governor of the state where the emissions come from.[168] In this case, either the Secretary of Defense, the installation commander, or more likely both, could assume the role of governor as the responsible parties and receive reports from EPA with corresponding instructions to act on EPA's findings.

The formal notification presented by the EPA Administrator under section 115(a) of the Act requires revision of the "[the portion of the] applicable implementation plan as is inadequate to prevent or eliminate the endangerment" caused by the emissions.[169] "Applicable implementation plan" is defined in the Act and refers to ambient standards in both State and Federal Implementation Plans.[170] This subjects the source of the emissions to a revised Federal Implementation Plan under section 110(c).[171] Because a Federal Implementation Plan already exists in section 110 and allows the EPA Administrator to promulgate a federal plan to fill in for a deficient state plan, if, as proposed, section 115 is held to apply more broadly, there is no need to modify this section for purposes of regulating DOD.[172]

In practice, this process would work as follows: a nation that hosts a DOD facility would first submit a report such as the IPCC report to the EPA Administrator. This report would outline the risks to the host nation presented by the emissions of the DOD facility. If the Administrator agrees that the emissions represent a risk to public health or welfare in the foreign country, the Administrator will then require the section 110 ambient quality standards for the DOD facility's region address these emissions, either through revision of an existing plan or promulgation of a Federal Implementation Plan.[173] DOD must then comply with the new EPA standards or risk EPA enforcement, which includes civil penalties of up to $25,000 per day as well as criminal penalties for knowing violations.[174]

VI. Conclusion

The threats posed by climate change are looming larger every year, and many are already being felt around the world. It is essential to combat greenhouse gas emissions causing climate change through a multi-faceted approach of tightening existing regulations, finding alternatives to existing sources of energy, and bringing the largest sources of emissions under the umbrella of existing regulation. With its staggering amount of fuel consumption and exemptions from even the most minimal environmental regulations, DOD and its installations around the world must be subject to emissions regulations to help mitigate the devastation and conflict that climate change will bring. By viewing climate change in terms of the global conflict it will cause and associated harm to DOD's mission readiness, it may be possible to marshal the political will to apply environmental regulations to a Department that has historically avoided them.

The CAA provides the tools for regulation of greenhouse gas emissions, and there are multiple ways in which it could be applied to DOD: technology-based performance standards, the Reciprocity Clause, and closing exemptions for military vehicles. Each approach has advantages and disadvantages, but as the problems of climate change continue to worsen, it is essential to quickly find a way to use the Act to regulate DOD emissions.

167. *See Criteria Air Pollutants*, U.S. Env't Prot. Agency, https://www.epa.gov/criteria-air-pollutants [https://perma.cc/JEA6-R7SJ] (Aug. 9, 2022). PM and SO_2 are two of the six current criteria pollutants for which EPA must set ambient quality standards and states must regulate under an implementation plan. *Id.*
168. 42 U.S.C. § 7415(a).
169. 42 U.S.C. §§ 7415(a)–(b).
170. 42 U.S.C. § 7602(q).
171. *See* 42 U.S.C. § 7410(c).
172. *See* 42 U.S.C. § 7602(y); *Basic Information About Air Quality SIPs*, U.S. Env't Prot. Agency, https://www.epa.gov/air-quality-implementation-plans/basic-information-about-air-quality-sips#:~:text=A%20State%20Implementation%20Plan%20(SIP,of%20the%20Clean%20Air%20Act [https://perma.cc/WGR8-PNBX] (Jan. 25, 2022). A State Implementation Plan allows states to take over administration and enforcement of EPA standards, and a Federal Implementation Plan is used by EPA to administer and enforce its own standards when state plans are incomplete or insufficient. *See id.*
173. *See* 42 U.S.C. § 7415(b).
174. 42 U.S.C. § 7413(b).

CYBERSECURITY IN ELECTRIC DISTRIBUTION: THE ONE WEAK LINK IN AN INTERCONNECTED POWER GRID AND THE THREAT IT POSES

Sonal Patel*

ABSTRACT

Our reliance on electricity to function in our day-to-day lives indicates this critical infrastructure's importance. Likewise, any vulnerability to the electric grid risks the reliability of electricity and makes the United States susceptible to cyber threats. A successful attack on the electric grid could impair national security, the economy, and public health.[1] Recent events, such as the Colonial Pipeline attack and the 2020 Coronavirus pandemic that forced people to work from home, have renewed interest in cybersecurity regarding critical infrastructure.[2] Following this heightened interest, this Note will focus on the lack of cybersecurity standards in electric distribution due to a split jurisdiction over the electric grid. This Note argues that despite the jurisdictional split, by adhering to Electric Power Supply Ass'n's *("EPSA's") three-factor test, the Federal Energy Regulatory Commission ("FERC") and North American Electric Reliability Corporation ("NERC") have the requisite authority to mandate cybersecurity standards over distribution because inconsistent application of cybersecurity by states directly affects the wholesale market as it exposes the grid to vulnerabilities. With this extended authority, FERC and NERC can then close the regulatory gap using a framework similar to State Implementation Plans ("SIPs") found under the Clean Air Act ("CAA") to require states to create and implement a similar framework for electric distribution cybersecurity based on NERC's Critical Infrastructure Protection ("CIP") standards. Using a SIP-like framework will help align distribution to the rest of the grid's cybersecurity measures in a flexible manner that will allow states to retain autonomy over electric distribution.*

I. Introduction

Smart technology has allowed users to automate regular appliances to efficiently communicate and coordinate commands that would otherwise need to be done manually. This technology relies on several factors, such as artificial intelligence, machine learning, and data analysis working together to give the device cognitive awareness.[3] Devices, such as a ring doorbell or a smart refrigerator, allow the user to control the devices to maximize the device's performance.[4]

One type of smart technology, known as the Internet of Things ("IoT"), relies on Internet connection to allow remote access and to provide connectivity and communication to devices.[5] The ability to access devices remotely renders said technology vulnerable to hackers.[6] Smart

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1. *See* Steve Livingston et al., *Managing Cyber Risk in the Power Sector*, Deloitte Insights (Jan. 31, 2019), https://www2.deloitte.com/us/en/insights/industry/power-and-utilities/cyber-risk-electric-power-sector.html [https://perma.cc/5XRN-8VNS].
2. *See generally* Press Release, White House, Fact Sheet: Biden Administration and Private Sector Leaders Announce Ambitious Initiatives to Bolster the Nation's Cybersecurity (Aug. 25, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/25/fact-sheet-biden-administration-and-private-sector-leaders-announce-ambitious-initiatives-to-bolster-the-nations-cybersecurity/ [https://perma.cc/5Q78-YH8C].
3. *See* Kelly Bowers, *What Is Smart Technology and What Are Its Benefits?*, Rezaid (Sept. 28, 2022), https://rezaid.co.uk/smart-technology-and-its-benefits/.
4. *See generally* Angelo Rahme, *IoT Device Monitoring: Discover, Manage, and Monitor*, Inside Telecom (Sept. 19, 2022), https://insidetelecom.com/iot-device-monitoring-discover-manage-and-monitor/ [https://perma.cc/VHA5-43HU].
5. *See 18 Most Popular IoT Devices in 2021 (Only Noteworthy IoT Products)*, Software Testing Help (Nov. 1, 2021), https://www.softwaretestinghelp.com/iot-devices/ [https://perma.cc/U7BD-ZTGN].
6. *See* U.S. Gov't Accountability Off., GAO-21-81, Electricity Grid Cybersecurity 7 (2021), https://www.gao.gov/assets/gao-21-81.pdf [https://perma.cc/87RP-AQD9] [hereinafter GAO-21-81].

technology can be hacked and infected with botnets[7] that can allow a hacker to, for example, control how much energy the device is using and affect the electric grid to some degree.[8] While such an attack has yet to happen, a March 2021 U.S. Government of Accountability Office ("GAO") report mentions a 2018 university research study finding that malicious actors are capable of infecting smart technologies, such as smart refrigerators or water heaters, to launch a coordinated attack against the electric grid by increasing or decreasing the electricity demand.[9] This would disrupt the grid and potentially cause a blackout.[10] In these circumstances, it is the consumer who is in control of the devices they plug in.[11] Utility companies, in turn, are limited in their ability to act because they do not influence what devices are used by consumers and the level of cybersecurity those devices have.[12] The GAO report also finds that distributed energy sources, such as rooftop solar units and battery storage units, also leave distribution companies vulnerable to cyberattacks because consumers control and operate them.[13] These types of potential indirect attacks on the electric grid show that the more interconnected the grid becomes, the more likely there is a chance of introducing vulnerabilities from the demand side because there are a larger number of devices connecting and operating outside of the distribution company's control.[14] As vulnerabilities in the electric grid increase, the core infrastructures of the electric grid—generation and transmission, and distribution plants—must establish a cybersecurity framework to limit cyberattacks.

Distribution companies are also at risk of direct cyberattacks. While such an event has yet to be reported in the United States,[15] the most famous example occurred in 2015 when hackers remotely accessed the supervisory control and data acquisition ("SCADA") systems of three Ukrainian electricity distribution companies, leaving over 200,000 customers without electricity.[16] Some consequences of the Ukraine attack included theft of personal information and ransomware demands, thereby highlighting the vulnerability of the distribution industry.[17]

A more recent example is the Colonial Pipeline cyberattack.[18] Legal commentators opine that pipeline infrastructure lacks mandatory cybersecurity regulation.[19] The Transportation Security Administration ("TSA") has jurisdiction over pipeline infrastructure, and while they have the authority to mandate cybersecurity measures, TSA only relies on voluntary guidelines.[20] This regulatory oversight in cybersecurity became apparent in May 2021 when Colonial Pipeline was hacked.[21] As one of the largest carriers of refined oil in the United States, Colonial Pipeline provides oil for about 45% of the East Coast.[22] The hack on the pipeline lasted roughly six days.[23] While Colonial Pipeline paid $4.4 million ransom within the first two days of the hack,[24] decrypting and removing malware from the computer systems delayed the company's ability to resume operations.[25] The result: gas shortages, panic buying in many states, and the Joe Biden Administration's declaration of a state of emergency in attempts to mitigate the shortage of oil and disruption of critical infrastructure.[26] Today, the Colonial Pipeline attack is considered the largest "publicly disclosed cyberattack against critical infrastructure in the U.S."[27] After the attack, FERC Chairman Richard Glick and FERC Commissioner Allison Clements commented that the Colonial Pipeline cyberattack and its aftermath highlight the regulatory gap in pipeline infrastructure and prove a crucial need to establish mandatory pipeline cybersecurity standards.[28] Specifically, the FERC Chairman and Commissioner Clements said that allowing pipelines to adopt standards voluntarily is inadequate to address the sophistication of cyberattacks, especially as they are likely to increase.[29]

7. *Id.* at n.41 ("A botnet is a network of devices infected with malicious software and controlled as a group without the owners' knowledge.").
8. *See id.* at 18–19.
9. *Id.* at 18.
10. *Id.*
11. *Id.*
12. *Id.* at 19.
13. *Id.* at 20.
14. *Id.*
15. *Id.* at 22, 27. The U.S. Department of Energy mandates that U.S. utilities report any significant incidents or disturbances resulting from cyberattacks disrupting the reliability or availability. Note, however, that most information-sharing programs such as the Cyber Risk Information Sharing Program are voluntary.
16. *See* Nat'l Assoc. of Regul. Util. Comm'rs, Cybersecurity Strategy Development Guide 1 (2018), https://pubs.naruc.org/pub/8C1D5CDD-A2C8-DA11-6DF8-FCC89B5A3204 [https://perma.cc/VS6J-DSQ6].
17. *Id.*
18. *See generally Critical Infrastructure: Cybersecurity in the Post-Colonial Pipeline World*, Van Ness Feldman LLP (June 30, 2021), https://www.vnf.com/critical-infrastructure-cybersecurity-in-the-post-colonial-pipeline-world [https://perma.cc/5B5D-2YL9] [hereinafter *Critical Infrastructure: Post-Colonial Pipeline*] (a recording of a discussion of group of panelists within the Pipeline & LNG, Electric, Cybersecurity, and Government Advocacy practice groups discussing regulatory issues arising out of the Colonial Pipeline attack in May 2021); *see also* Jane E. Carmody & Jane Rueger, *Ransomware, Cyberattacks, and Cybersecurity for Pipelines and LNG Facilities*, Perkins Coie (May 17, 2021), https://www.perkinscoie.com/en/news-insights/ransomware-cyberattacks-and-cybersecurity-for-pipelines-and-lng-facilities.html [https://perma.cc/236J-LEUG].
19. *See Critical Infrastructure: Post-Colonial Pipeline*, *supra* note 18.
20. *See* Carmody & Rueger, *supra* note 18.
21. *See id.*
22. *Id.*
23. *See Colonial Pipeline Cyber Incident*, Off. of Cybersecurity, Energy Sec. & Emergency Response, https://www.energy.gov/ceser/colonial-pipeline-cyber-incident [https://perma.cc/UMP6-YK8M] (last visited Oct. 28, 2022).
24. *See* Collin Eaton & Dustin Volz, *Colonial Pipeline CEO Tells Why He Paid Hackers a $4.4 Million Ransom*, Wall St. J. (May 19, 2021, 4:51 PM), https://www.wsj.com/articles/colonial-pipeline-ceo-tells-why-he-paid-hackers-a-4-4-million-ransom-11621435636 [https://perma.cc/76NN-WGUG].
25. *See* Carmody & Rueger, *supra* note 18.
26. *See id.*; James Walker, *Cyber Attack on Colonial Pipeline Leads to Emergency Declaration in 17 States*, Newsweek (May 10, 2021, 3:59 AM), https://www.newsweek.com/cyber-attack-colonial-pipeline-emergency-declaration-1589936 [https://perma.cc/XH7L-5CMU].
27. *See* Sean Michael Kerner, *Colonial Pipeline Hack Explained: Everything You Need to Know*, WhatIs.com (Apr. 26, 2022), https://whatis.techtarget.com/feature/Colonial-Pipeline-hack-explained-Everything-you-need-to-know [https://perma.cc/EW4S-W7LR].
28. Press Release, U.S. Fed. Energy Regul. Comm'n, Statement from FERC Chairman Richard Glick: Chairman Glick and Commissioner Clements Call for Examination of Mandatory Pipeline Cyber Standards in Wake of Colonial Pipeline Ransomware Incident (May 10, 2021), https://www.ferc.gov/news-events/news/statement-ferc-chairman-richard-glick-chairman-glick-and-commissioner-clements [https://perma.cc/W38H-SK8C].
29. *Id.*

The Colonial Pipeline hack stands as an example of the disastrous effects of a cyberattack when there are no mandatory cybersecurity standards in place. The irony in the joint statement made by FERC's Chairman and Commissioner Clements is that the electric distribution grid is in a similar situation as the pipelines. While electric generation and transmission cybersecurity standards are mandated and regulated by FERC and the North American Electric Reliability Corporation ("NERC"), electric distribution falls under state jurisdiction.[30] Moreover, pipeline infrastructure, as a form of interstate commerce, falls under federal jurisdiction, so the issue in the case of Colonial Pipeline was that TSA has not yet established mandatory cybersecurity standards.[31] The issue in the electric grid, as this Note will show, is that leaving states to regulate electric distribution has resulted in states creating and applying inconsistent cybersecurity regulations, if any.[32] The consequence of this inconsistency in cybersecurity regulation is that one of the most valuable and critical infrastructures in America—the electric grid—is left vulnerable.

The limited reach of the federal government and the inconsistent—or in some cases nonexistent—attempts of states have created a regulatory gap within the electric distribution. Unlike electric generation—which is filled with redundant cybersecurity measures—and electric transmission—which has base-level cybersecurity measures provided by Critical Infrastructure Protection standards ("CIPs")—electric distribution remains most vulnerable with no consistently established cybersecurity measures.[33] The vulnerabilities created by the regulatory gap have the potential to disturb the health, safety, and stability of the country and its economy.[34] Experts say that if a successful attack on the electric grid were to happen, it would be similar to the cyberattack that occurred in Ukraine.[35]

Fortunately, there is no successful example of a cyberattack on the electric grid. However, Manny Cancel, Senior Vice President at NERC, stated that recovery from an attack is highly dependent on the level of damage.[36] For example, if hackers *only* found a way to shut systems down, the recovery would likely be short, but it may still vary depending on how sophisticated the attack was or what other systems the hackers managed to infect.[37] In general, it is expected that a cyberattack will be treated similarly to a natural disaster disrupting the electric grid.[38] The February 2021 Texas grid failure, due to an extremely harsh winter, is a prime example of what can be expected as a consequence of an attack on electric reliability.[39] Texas was wholly unprepared for the full extent of the severe winter weather and its effects on electric reliability.[40] The record-breaking cold caused residents to increase the demand for electricity past what the grid was capable of and past the worst-case scenarios that grid operators had planned for.[41] This, in addition to other factors such as icy conditions rendering electric generation inoperable, left Texas in a blackout.[42] In the end, "bad policies and lack of oversight" cost Texas and the United States $200 billion.[43]

The issue here is that without cybersecurity standards establishing a base level of protection, recovery will be slow because an attack can exploit any number of vulnerabilities. Hence, closing the regulatory gap is a crucial step to limit the occurrence of a cyberattack because, as the SolarWinds attack taught us, malware can go undetected for several months before it is noticed, resulting in a bigger problem.[44] If a reputable software company, used by several federal agencies and cybersecurity firms, was hacked despite its stringent security measures, electric distribution without baseline cybersecurity regulations is certainly susceptible to a cyberattack.[45]

To achieve this, this Note's legal solution is to make a case for creating a framework similar to State Implementation Plans ("SIPs")[46] found under the Clean Air Act ("CAA") so that the federal government can establish general goals of what cybersecurity for a utility should encompass and allow states to determine how to feasibly meet those goals properly. The legal basis for this solution is the ambiguity in the line drawn by the Federal Power Act ("FPA") for state and federal jurisdiction and how the courts and FERC interpretation of the statute creates an opportunity to extend federal jurisdiction.

Energy infrastructure is vital to maintaining the health and safety of the country and is thus considered critical infrastructure.[47] Primarily because of its designation

30. The Energy Policy Act ("EPAct") specifically omits any mention of electric distribution. *See* Energy Policy Act of 2005, Pub. L. No. 109–58, 16 U.S.C. § 824o.
31. *See* Carmody & Rueger, *supra* note 18.
32. See discussion *infra* Part IV.B.
33. *See* Robert Walton, *Sophisticated Hackers Could Crash the US Power Grid, but Money, Not Sabotage, Is Their Focus*, UtilityDive (Oct. 28, 2021), https://www.utilitydive.com/news/sophisticated-hackers-could-crash-the-us-power-grid-but-money-not-sabotag/603764/ [https://perma.cc/DJB4-K6MC].
34. Yuchong Li & Qinghui Liu, *A Comprehensive Review Study of Cyber-Attacks and Cyber Security; Emerging Trends and Recent Developments*, 7 Energy Reps. 8176, 8177 (Nov. 2021).
35. *See* Walton, *supra* note 33.
36. *See id.*
37. *See id.*
38. *See id.*
39. *See* Brad Plumer, *A Glimpse of America's Future: Climate Change Means Trouble for Power Grids*, N.Y. Times (June 15, 2021), https://www.nytimes.com/2021/02/16/climate/texas-power-grid-failures.html [https://perma.cc/U5CV-4NH3].
40. *See id.*
41. *See id.*
42. *See id.*
43. Robert Bryce, *Get Ready for the Blackouts*, Wall St. J. (Sept. 7, 2021, 6:07 PM), https://www.wsj.com/articles/blackouts-generac-electric-grid-texas-california-biden-decarbonize-renewables-climate-11631043410 [https://perma.cc/6F8H-6M76].
44. *See* Ravie Lakshmanan, *Here's How SolarWinds Hackers Stayed Undetected for Long Enough*, The Hacker News (Jan. 21, 2021), https://thehackernews.com/2021/01/heres-how-solarwinds-hackers-stayed.html [https://perma.cc/G964-EQXD]. The SolarWinds malware had entered through a backdoor and was spread as part of a system update, infecting several companies who use the SolarWinds software. *See id.* The malware is thought to have gone undetected for at least two months, silently collecting information before it was identified and removed. *See id.*
45. *See id.*
46. For simplicity's sake, this Note will be referring to using a framework that is like CAA SIPs as SIP(s) because the idea is similar. However, it is important to note that SIPs under the CAA are mandated explicitly for Air Quality Standards and do not extend to other issues like cybersecurity.
47. *See Critical Infrastructure Sectors*, Cybersecurity & Infrastructure Sec. Agency (Oct. 21, 2020), https://www.cisa.gov/critical-infrastructure-sectors [https://perma.cc/MY89-W5D2] (critical infrastructure is any asset, system or network, physical or virtual, whose incapacitation or destruction would leave the United States vulnerable. There are 16 sectors identified

as critical infrastructure, it is imperative that mandatory cybersecurity standards are imposed to ensure a requisite level of security for the electric grid. Without adequate security, the United States is left exposed and vulnerable to the increasing level of cyber threats as technology advances and global tensions rise[48] creating numerous opportunities for malicious actors to disrupt the functionality of the United States. To remedy this, a legal solution that establishes mandatory cybersecurity standards while remaining flexible enough to allow states to retain autonomy and implement feasible cybersecurity policies will best protect electric distribution. Distribution is very localized, and, therefore, a flexible approach to this issue is critical for both states and distribution entities because states are in a better position to assess concerns based on geographic location and ensure distribution entities meet the minimum reliability, safety, and operational standards.[49]

The reality is that creating cybersecurity standards will not prevent *all* cyberattacks, but the purpose of this legal solution, SIPs, is to create baseline security standards to make it harder to attack our critical infrastructure by limiting vulnerabilities.[50] To advocate for creating federal regulation without infringing on state jurisdiction, Part II of this Note defines cyberattacks and cybersecurity. Part III discusses the electric grid, current federal cybersecurity standards, and how they function. Part IV looks at state frameworks and provides examples of states' attempts to create cybersecurity standards and the inadequacy of the process as well as the overall effects on the electric grid. Part V explores the authority for and presents a legal analysis for FERC and NERC to extend federal jurisdiction. Part VI discusses using the SIP framework to create mandatory cybersecurity standards for electric distribution that states can follow. Part VII then looks at a hypothetical SIP CIP Cybersecurity standard.

II. What Are Cyberattacks and Cybersecurity

The National Institute of Standards and Technology, a nonregulatory federal agency, defines a cyberattack as a targeted attack occurring in cyberspace aiming to disrupt, destroy, or maliciously control an entity's computing environment/infrastructure "or destroying the integrity of the data or stealing controlled information."[51] A cyberattack can cause catastrophic destruction to the reputation of the country, the economy and threaten public safety.[52] Vulnerability to cyberattacks is also extremely difficult to remedy due to the evolving nature of the attacks.[53]

To protect people, data, and infrastructure, it is important to have cybersecurity. The Cybersecurity Infrastructure & Security Agency, a federal agency that works with other agencies, like the U.S. Department of Energy ("DOE"), to maintain critical infrastructure, defines cybersecurity as the protection of "networks, devices, and data from unauthorized access or criminal use."[54] Cybersecurity measures cannot guarantee protection against hackers, but having standards does reduce vulnerabilities and makes it harder for a person to hack the system.[55] Unlike physical attacks, cyberattacks are difficult to detect; therefore cybersecurity aims to protect an entity internally.[56]

Other complications include malware complexity, which makes it difficult to identify, analyze, and mitigate.[57] For example, the United States created the Stuxnet worm, which Israel modified and used to target Iran.[58] The Stuxnet worm was malware that was meant to target Iran's nuclear facilities, but the malware spread beyond its intended target when it was discovered by other parties.[59] The malware has reportedly "destroyed numerous centrifuges in Iran's Natanz uranium enrichment facility by causing them to burn themselves out," and other groups have modified the malware to attack other facilities.[60] All it

as critical infrastructure wherein the United States has declared a national policy to strengthen and maintain and secure functioning for resilient critical infrastructure).

48. *See generally* Bob Violino, *Why Companies Are Moving to a "Zero Trust" Model of Cyber Security*, CNBC (Mar. 1, 2022, 10:58 AM), https://www.cnbc.com/2022/03/01/why-companies-are-moving-to-a-zero-trust-model-of-cyber-security-.html [https://perma.cc/AA3P-A84Y].
49. *See* Mark F. Sundback et al., *Electricity Regulation in the United States: Overview*, Thomson Reuters (July 1, 2020), https://content.next.westlaw.com/Document/Ieb49d7b91cb511e38578f7ccc38dcbee/View/FullText.html?transitionType=Default&contextData=(sc.Default)&firstPage=true#:~:text=The%20ongoing%20requirements%20to%20operate,reliability%2C%20safety%20and%20operational%20standards [https://perma.cc/Z3KA-AAS9].
50. *See Shields Up*, Cybersecurity & Infrastructure Sec. Agency, https://www.cisa.gov/shields-up [https://perma.cc/B9BK-VQDP] (last visited Dec. 12, 2022).
51. Comput. Sec. Res. Ctr., *Cyber Attack*, Nat'l Inst. of Standards & Tech., https://csrc.nist.gov/glossary/term/Cyber_Attack [https://perma.cc/3UAG-XGVU] (last visited Oct. 22, 2022).
52. *See* Li & Liu, *supra* note 34, at 8177.
53. *See U.S. Department of Energy Cybersecurity Strategy 2018-2020*, U.S. Dep't of Energy 2 (June 2018), https://www.energy.gov/sites/default/files/2018/07/f53/EXEC-2018-003700%20DOE%20Cybersecurity%20Strategy%202018-2020-Final-FINAL-c2.pdf [https://perma.cc/D8HJ-G9ED] [hereinafter *U.S. Dep't Energy Cybersecurity Strategy*].
54. *See Security Tip (ST04-001): What Is Cybersecurity?*, Cybersecurity & Infrastructure Sec. Agency (Nov. 14, 2019), https://www.cisa.gov/uscert/ncas/tips/ST04-001 [https://perma.cc/T4NV-D569]; *About CISA*, Cybersecurity & Infrastructure Sec. Agency https://www.cisa.gov/about-cisa [https://perma.cc/Q8YV-KPHW] (last visited Mar. 5, 2022) (CISA is an independent federal agency tasked with helping other agencies, such as FERC and DOE, navigate their way through risks associated with physical and cyberattacks on critical infrastructure).
55. *See Security Tip (ST04-001): What Is Cybersecurity?*, *supra* note 54.
56. *See* Christopher S. Chivvis & Cynthia Dion-Schwarz, *Why It's So Hard to Stop a Cyberattack—and Even Harder to Fight Back*, TheRANDBlog (Mar. 30, 2017), https://www.rand.org/blog/2017/03/why-its-so-hard-to-stop-a-cyberattack-and-even-harder.html [https://perma.cc/VU5Z-89U6].
57. *See id.*; *U.S. Dep't Energy. Cybersecurity Strategy* at 5, *supra* note 53.
58. *See What Is Stuxnet?*, Trellix, https://www.trellix.com/en-us/security-awareness/ransomware/what-is-stuxnet.html [https://perma.cc/97DN-D6WP] (last visited Mar. 5, 2022); William J. Broad et. al., *Israeli Test on Worm Called Crucial in Iran Nuclear Delay*, N.Y. Times (Jan. 15, 2011), https://www.nytimes.com/2011/01/16/world/middleeast/16stuxnet.html [https://perma.cc/P8FS-A8B9].
59. *See What Is Stuxnet?*, *supra* note 58:
> Stuxnet was a multi-part worm found on a USB drive and spread through Microsoft Windows computers. The malware was designed to search for programmable logic controllers (PLCs) enabled computers. Once found, the malware attack updated its code over the Internet and began sending damage-inducing instructions. At the same time, the virus sent false feedback to the main controller. Anyone monitoring the equipment would have had no indication of a problem until the equipment began to self-destruct.

see also Chivvis & Dion-Schwarz, *supra* note 56.
60. *See What Is Stuxnet?*, *supra* note 58.

took for the Stuxnet attack was to download the contents of the USB onto a computer connected to the company network, where it wreaked havoc long before it was discovered.[61] While it took months to decipher the Stuxnet worm, the true horror was the fact that the worm physically destroyed something rather than simply corrupt computers and data—something that had never been seen before.[62] To prevent a similar situation from occurring in the United States, specifically in electric distribution, the government must implement mandatory cybersecurity measures. By implementing mandatory cybersecurity standards, electric distribution will essentially create a foundation for defense against cyberattacks and make it harder for hackers to launch a cyberattack in the first place successfully.

III. The Electric Grid

A. *Generally*

In the United States, the electric sector is divided into three industries: generation, transmission, and distribution.[63] The generation industry generates high-voltage electricity from various sources, such as hydropower and natural gas.[64] The transmission industry transports the high-voltage electricity across the country via power lines, where they eventually reach the distribution plants.[65] There, the high-voltage electricity is converted into low-voltage electricity that can be delivered to customers.[66]

Today, the electric grid consists of overlapping jurisdiction between the federal government and the states. In *Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Electric Co.*, the court found that the dormant Commerce Clause prevented "Rhode Island from regulating interstate wholesale electricity sales in Massachusetts" because that was a matter left for the U.S. Congress.[67] This holding created a regulatory gap as it "left interstate, wholesale electricity sales unregulated."[68] In response, Congress passed the FPA, which separated jurisdiction over the electric grid.[69]

Under the FPA, FERC has authority over electric transmission because those lines run interstate.[70] States retain jurisdiction over generation and distribution because both largely occur within the state.[71] Section 201(b) of the FPA states, "FERC regulated the initial portions of the 'one-way' flow of power—wholesale sales of generated power between utilities in interstate commerce and the associated high-voltage transmission of electric energy in interstate commerce" while drawing the line at allowing states to "regulate" any other sale of "electric energy" and "facilities used in local distribution."[72] In 2005, the FPA was amended by the Energy Policy Act ("EPAct").[73] The EPAct focused on electric grid reliability by strengthening FERC's regulatory powers over the bulk power system ("BPS").[74] Specifically, the EPAct added section 215(a)(1), further clarifying the jurisdictional split by defining BPS as:

> (A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and
>
> (B) electric energy from generation facilities needed to maintain transmission system reliability.[75]

Section 215(a)(1) identifies explicitly electric generation and transmission because they are the backbone of America's energy infrastructure[76] and the effects of interruptions in even just one of these will be felt in more than one location, thereby affecting reliability.[77] Additionally, section 215(a)(2) establishes NERC as an independent Electric Reliability Organization ("ERO"), subject to oversight by FERC.[78] NERC's purpose is to create and enforce electric reliability standards,[79] which are further defined in section 215(a)(3) and are approved by FERC.[80] NERC has defined reliable BPS as a system that can meet the "electricity needs"

61. *See id.*
62. *See* Jo Lauder, *Stuxnet: The Real Life Sci-Fi Story of "The World's First Digital Weapon,"* ABC News (Oct. 12, 2016), https://www.abc.net.au/triplej/programs/hack/the-worlds-first-digital-weapon-stuxnet/7926298 [https://perma.cc/B4JV-SY6V].
63. *See* Off. of Elec. Delivery & Energy Reliability, U.S. Dep't of Energy, DOE/OE-0017, United States Electricity Industry Primer 6 (July 2015).
64. *Id.*
65. *Id.*
66. *See Electricity Explained: How Electricity Is Delivered to Consumers*, U.S. Energy Info. Admin. (Aug. 11, 2022), https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php [https://perma.cc/J9QQ-3EMA]; Ali Arif Merchant & Michael F. Thompson, *The Electric Power Transmission and Distribution Industry*, 2 In Context (2010), https://www.incontext.indiana.edu/2010/july-aug/article3.asp#:~:text=The%20T%26D%20market%20supplies%20equipment,grid%2C%20either%20overhead%20or%20underground [https://perma.cc/LPB6-FT53].
67. *See generally* Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83 (1927); *see also* Jeffery S. Dennis et al., *Federal/State Jurisdictional Split: Implications for Emerging Electricity Technologies*, U.S. Dep't of Energy 3 (Dec. 2016), https://www.energy.gov/sites/prod/files/2017/01/f34/Federal%20State%20Jurisdictional%20Split--Implications%20for%20Emerging%20Electricity%20Technologies.pdf [https://perma.cc/3VLE-KKJ8].
68. *Id.*
69. *Id.*
70. *See Department of Energy (DOE) and Federal Energy Regulatory Commission (FERC)*, Latham & Watkins LLC, https://www.lw.com/practices/DOEandFederalEnergyRegulatoryCommission#:~:text=The%20Federal%20Energy%20Regulatory%20Commission,sale%20of%20electricity%20at%20wholesale [https://perma.cc/8AQR-8KWH] (last visited Mar. 3, 2022).
71. *See* United States Electricity Industry Primer, *supra* note 63, at 65.
72. Dennis et al., *supra* note 67, at 8.
73. *See Fact Sheet: Energy Policy Act of 2005*, U.S. Fed. Energy Regul. Comm'n 1 (Aug. 8, 2006), https://www.ferc.gov/sites/default/files/2020-04/epact-fact-sheet.pdf [https://perma.cc/NN7R-MC8T].
74. *See id.*
75. Energy Policy Act of 2005, Pub. L. No. 109–58, 16 U.S.C. § 824o.
76. *See* Off. of Elec., U.S. Dep't of Energy, Executive Order on Securing the United States Bulk-Power System: Frequently Asked Questions, 1 (Jan. 2021), https://www.energy.gov/sites/prod/files/2021/01/f82/BPS%20EO%20FAQs%20January%202021%20v.01.15.2021.pdf [https://perma.cc/87FK-9MZP].
77. *See Bulk Power System (BPS)*, WhatIs.com (Mar. 2011), https://www.techtarget.com/whatis/definition/bulk-power-system-BPS#:~:text=A%20bulk%20power%20system%20 [https://perma.cc/QM9H-LDF7].
78. *See Fact Sheet: Energy Policy Act of 2005*, *supra* note 73, at 2–3.
79. *See Frequently Asked Questions*, N. Am. Elec. Reliability Corp. 1 (Aug. 2013), https://www.nerc.com/AboutNERC/Documents/NERC%20FAQs%20AUG13.pdf [https://perma.cc/KWF6-G8H2].
80. 16 U.S.C. § 824o(b)(1)–(2), (d).

of customers even when situations arise that "reduce the amount of available electricity."[81] Under this description, NERC focuses on adequacy and security, referring to having enough resources to provide electricity and to respond to or stop threats.[82] Thus, under section 215, FERC and NERC work together to create, establish, and maintain BPS.[83] NERC has further defined BPS[84] to include any transmission or generation facility operating at 100 kilovolt ("kV") or above, while anything under 100 kV falls outside NERC's jurisdiction, subject to exceptions based on a necessity for reliable operation.[85]

The jurisdictional line drawn by the FPA essentially preempts states from getting involved in matters regarding the BPS. Courts, however, have granted FERC jurisdiction when it is a matter touching interstate transmission or the wholesale market.[86] For example, in *New York v. Federal Energy Regulatory Commission (FERC)*, the U.S. Supreme Court dealt with a case concerning New York and FERC's right to regulate rates.[87] Originally, when electricity was still generated and delivered locally, states had jurisdiction over their regulation and rates.[88] However, the addition of transmission lines added an interstate element enabling FERC to step in and regulate rates involving interstate transmission to ensure that they were just and reasonable under FPA section 205(b).[89]

Upon noticing that some utilities that owned transmission lines would force other utilities to pay a higher price to use their power lines to deliver electricity, FERC issued Order 888, calling this conduct discriminatory under section 205 and ordered unbundling of wholesale and retail rates.[90] The Order mandated utilities to unbundle generation and transmission services, which meant that if a utility company did not directly generate and give customers electricity, they had to itemize their bill to show the exact transmission and generation costs.[91]

New York opposed FERC's authority over unbundled retail rates, arguing that states have the right to regulate the rate for matters involving local distribution. In essence, New York wanted the Supreme Court to reverse FERC's order to regulate unbundled retail rates.[92] Thus, the question before the Court was whether FERC had jurisdiction over unbundled retail in general.[93] The Court found that FERC did have jurisdiction over unbundled rates, not just wholesale rates because FERC's authority covered all transmission.[94] In other words, FERC can claim jurisdiction over matters tethered to transmission because some electricity given to retailers consists of electricity from across state lines.[95]

Another example can be seen in *FPC v. Southern California Edison Co*.[96] In essence, Southern California Edison ("Edison") sold electricity in bulk, within the state, to the city of Colten, a municipality that used some of the electricity it bought and sold the rest to its constituents.[97] Traditionally, the Public Utilities Commission of California has jurisdiction over the rates on this type of transaction, but because part of the electricity Edison received and then sold to Colten came from out of the state, Colten requested FERC take jurisdiction over the transaction.[98] Essentially, Edison received power that came from Nevada and Arizona and sold it at a wholesale rate to Colton.[99] The Supreme Court held that FERC had jurisdiction over this transaction under section 201(b), which grants FERC jurisdiction over all wholesale sales not expressly exempted by the FPA.[100] In its decision, the Court noted that Congress, when writing section 201(b), only gave states jurisdiction over retail rates to ultimate customers and that the statute should only be read generally.[101] This interpretation made FPC jurisdiction "plenary and extended it to all wholesale sales in interstate commerce except those which Congress has made explicitly subject to regulation by the States."[102]

Both cases depict that even though the seller and buyer are within a single state, FERC does not automatically divest its jurisdiction because the electric grid is interconnected.[103] Therefore, transactions affecting transmissions or wholesale sales remain an interstate matter.

81. *See Department of Energy (DOE) and Federal Energy Regulatory Commission (FERC)*, *supra* note 70.
82. *Id.*
83. *See ERO Enterprise Guide for Compliance Monitoring*, N. Am. Elec. Reliability Corp. ii, iv (Oct. 2016), https://www.nerc.com/pa/comp/CAOneStopShop/ERO%20Enterprise%20Guide%20for%20Compliance%20Monitoring.pdf [https://perma.cc/WE5H-65ZY].
84. The Bulk Power System is also referred to as the bulk electric system ("BES").
85. *Bulk Electric System Definition Reference Document*, N. Am. Elec. Reliability Corp. i, iii (Aug. 2018), https://www.nerc.com/pa/Stand/2018%20Bulk%20Electric%20System%20Definition%20Reference/BES_Reference_Doc_08_08_2018_Clean_for_Posting.pdf [https://perma.cc/DMT2-WNYW]; *see also FERC Approves New Definition of Bulk Electric System, Reserves Determination of Which Facilities Are "Used in Local Distribution,"* Van Ness Feldman (Jan. 2, 2013), https://www.vnf.com/1126#:~:text=The%20new%20definition%20of%20E2%80%9Cbulk,an%20inclusion%20and%20exclusion%20process [https://perma.cc/2BV7-5MRF].
86. *See* Joel B. Eisen, *FERC's Expansive Authority to Transform the Electric Grid*, 49 U.C. Davis L. Rev. 1783, 1788 (2016).
87. *See* New York v. Fed. Energy Regul. Comm'n, 535 U.S. 1, 1 (2002).
88. *See* United States Electricity Industry Primer, *supra* note 63, at 4.
89. *See New York*, 535 U.S. at 2.
90. *See id.* at 11–12.
91. *See id.*
92. *See id.* at 16.
93. *See id.* at 4.
94. *See id.* at 20.
95. *See New York*, 535 U.S. at 17, 27. The court states that "there is no language in the statute limiting FERC's transmission jurisdiction to the wholesale market, although the statute does limit FERC's sale jurisdiction to that at wholesale." This allows FERC to use its transmission jurisdiction to reach into wholesale on matters relating to transmission. This is also why FERC chose not to regulate bungled retail rates.
96. *See generally* Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205 (1964).
97. *Id.* at 205.
98. *See id.* at 208 n.1.
99. *See id.* at 208.
100. *See id.* at 210.
101. Dennis et al., *supra* note 67, at 10–11.
102. *Id.* at 11.
103. *See* Lawrence R. Greenfield, *An Overview of the Federal Energy Regulatory Commission and Federal Regulation of Public Utilities,* Fed. Energy Regul. Comm'n (June 2018), 1, 15 https://www.ferc.gov/sites/default/files/2020-07/ferc101.pdf [https://perma.cc/FK7V-B7YG].

B. Federal Cybersecurity Standards Currently in Place on BPS

As mentioned above, electric grid regulation is the result of the combined effort of FERC and NERC. FERC regulates electricity by overseeing BPS.[104] NERC, as an ERO, was authorized to create CIP cybersecurity reliability standards for BPS.[105] These standards regulate all aspects of BPS, ranging from BPS Cyber System Categorization to Security Protection—all designed to mitigate cyberattacks on BPS.[106] CIP standards provide an organized framework for implementing cybersecurity standards that promote communication and collaboration between the federal government and participating entities.[107] According to Forcepoint, a computer security software company, the continuous implementation of CIP standards is essential to safeguarding American critical infrastructure.[108] The relationship enables the government and entity to swiftly respond to any cyber risks by creating baseline measures that entities are required to maintain to continue operating within the electric sector.[109]

According to MidAmerican Energy Companies'[110] training handbook for contractors, the company states that CIP standards are mandatory requirements with varying applicability depending on the type of system: bulk electric system cyber systems or other cyber assets.[111] Importantly, the handbook states that CIPs are not "one-size-fits-all" because there are several cyber and physical factors that may affect the level of security needed.[112] NERC ensures CIP compliance by issuing a penalty of up to $1.3 million a day per violation, and may include criminal prosecution.[113] An example of a CIP is CIP-011-2 Cyber Security—Security Protection:

> To prevent unauthorized access to BES Cyber System Information by specifying information protection requirements in support of protecting BES Cyber Systems against compromise that could lead to misoperation or instability in the Bulk Electric System (BES).[114]

CIP-011-2 requires entities to identify ways an unauthorized person can get access to information that could affect the reliability of the BPS if it is stolen or misused.[115] Further, it addresses how to protect and handle misuse of information.[116]

Sophos, an IT company that provides a variety of cybersecurity products, provides an example of how an entity can comply with CIP-011-2 using its products.[117] For example, to limit unauthorized access to pertinent information about the entity's BPS assets, the entity can implement Sophos Zero-Trust Network Access which helps "validate user identity, device health, and compliance before granting access to resources."[118]

C. The Regulatory Gap, the Jurisdictional Tension, and Its Implication on the Ability to Protect Critical Infrastructure

NERC mandates CIPs for electric generation and transmission,[119] but no relevant law or agency interpretation exists to extend cybersecurity standards to electric distribution. Consequently, it is presumed that about 80 to 90% of all grid assets fall outside the scope of CIP standards because of FPA sections 201(b) and 215 and NERC's definition of BPS.[120] The current structure and cybersecurity standards for the electric grid leave America ill-prepared for a cyberattack. Electric distribution is like the pipeline infrastructure industry in that it lacks mandatory reliability standards across all 50 states.[121] While an attack has yet to happen, there is no guarantee that it never will. The main takeaway here is that even though there has been no reported attack to compare the effectiveness of CIPs, the creation of minimum standards is crucial to minimize the risks of a cyberattack and ensure utilities are ready to

104. *See Bulk Electric System Definition Reference Document*, N. Am. Elec. Reliability Corp. 3 (Aug. 2018), https://www.nerc.com/pa/Stand/2018%20Bulk%20Electric%20System%20Definition%20Reference/BES_Reference_Doc_08_08_2018_Clean_for_Posting.pdf [https://perma.cc/XR44-MMFV] (BES: unless there is an exception or modification, all transmission elements, real power and reactive power operating or connected at 100kV or higher constitutes as BES. This does not include local distribution entities).
105. *See Cyber and Grid Security*, U.S. Fed. Energy Regul. Comm'n (Dec. 17, 2020), https://www.ferc.gov/industries-data/electric/industry-activities/cyber-and-grid-security [https://perma.cc/89M6-KDLE].
106. Justin Peacock, *What Is NERC CIP*, Cyber Saint Sec., (2022), https://www.cybersaint.io/blog/what-is-nerc-cip [https://perma.cc/S96M-GC2P].
107. *See* Nat'l Inst. of Standards & Tech., Framework for Improving Critical Infrastructure Cybersecurity 1 (Feb. 12, 2014).
108. *See What Is Critical Infrastructure Protection (CIP)?*, Forcepoint, https://www.forcepoint.com/cyber-edu/critical-infrastructure-protection-cip [https://perma.cc/YX48-PZ2G] (last visited Oct. 22, 2022).
109. *See* Peacock, *supra* note 106.
110. *See generally Electricity*, Midamerican Energy Co., https://www.midamericanenergy.com/electricity [https://perma.cc/HPF7-Z7ZT] (last visited Mar. 5, 2022) (MidAmerican Energy is an Iowan company that generates and distributes electricity to Illinois, Iowa, and South Dakota).
111. *Cyber Asset Security Training Handbook for Contractors Table of Contents*, Midamerican Energy Co. (Sept. 10, 2021), https://www.midamericanenergy.com/content/pdf/cbt/contractor-handbook.pdf [https://perma.cc/9UTU-B4QS].
112. *Id.*
113. *Id.*
114. *See* Peacock, *supra* note 106.
115. *See* Rahul Awati, *North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP)*, SearchCompliance, https://searchcompliance.techtarget.com/definition/NERC-CIP-critical-infrastructure-protection [https://perma.cc/W2KG-FSEV] (last visited Mar. 5, 2022).
116. *Id.*
117. *See generally NERC-CIP Compliance Card*, N. Am. Energy Reliability Corp., https://www.sophos.com/en-us/medialibrary/Gated-Assets/PDF/NERC-CIP-compliance-card.pdf (last visited Mar. 5, 2022).
118. *See id.* at 1, 4 ("Zero Trust is a security framework requiring all users, whether in or outside the organization's network, to be authenticated, authorized, and continuously validated for security configuration and posture before being granted or keeping access to applications and data.").
119. *See* Awati, *supra* note 115.
120. *See Bulk Electric System Definition Reference Document*, N. Am. Energy Reliability Corp. 3 (Aug. 2018), https://www.nerc.com/pa/Stand/2018%20Bulk%20Electric%20System%20Definition%20Reference/BES_Reference_Doc_08_08_2018_Clean_for_Posting.pdf [https://perma.cc/ESC5-6V3B].
121. *See* Nat'l Assoc. of Regul. Util. Commissioners, Cybersecurity Strategy Development Guide 1, 1–2 (2018) (the distribution industry is regulated by states, leaving it up to each state and its Public Utility Commission ("PUC") to determine the consideration of cybersecurity measures).

respond and mitigate if it ever does happen.[122] Furthermore, even though the effectiveness of CIPs cannot currently be compared, NERC routinely runs CIP audits to ensure reliability and compliance.[123] For example, in 2019, NERC fined an unnamed company $10 million for violating 127 CIP standards.[124]

The jurisdictional split in energy regulation prevents uniform cybersecurity standards crucial for protecting critical infrastructure and maintaining a stable energy supply. This regulatory gap may have serious implications to the health and welfare of the country and the economy.[125] Note, however, that based on the holdings of both *New York v. Federal Energy Regulatory Commission*[126] and *FPC v. Southern California Edison Co.*,[127] FERC enjoys an extensive breadth of scope over matters relating to and affecting transmission and wholesale rates. So much so, that even courts are inclined to side with FERC, provided a reasonable argument. In the following paragraphs, this Note argues for using FERC's wide scope of interpretation over matters relating to electric transmission to create an exception that will allow FERC to mandate cybersecurity standards over electric distribution.

IV. Existing State Framework

A. State Government and Public Utility Commissions

States generally assign the task of maintaining and regulating electric distribution to Public Utility Commissions ("PUCs").[128] PUCs, if given the authority, often include regulating cybersecurity.[129] In the absence of any such federal or state regulation, utilities are subject to self-regulation.[130] GAO, in report GAO-21-81 addressing *Electricity Grid Cyber Security*, surveyed six PUCs on oversight responsibilities and found that none of them had mandatory cybersecurity standards within their jurisdiction.[131] Instead, the PUCs from the survey attempted to incorporate oversight responsibilities within their routine, but the actions taken by the PUCs varied.[132] For example, some used their broad regulatory powers to review the utilities' response to incidents while others held meetings with utilities to discuss cybersecurity.[133] The GAO report also took a survey of six distribution utilities that stated they were not subject to any mandatory standards specific to cybersecurity.[134] These companies, however, did use DOE's Cybersecurity Capability Maturity Model,[135] among other tools, to try and mitigate potential cybersecurity risks, but this was voluntary.[136]

The lack of definite cybersecurity measures leaves an entire industry within the electric sector vulnerable. As a consequence, a vital part of critical infrastructure is at risk of a cyberattack, and the interdependent nature of critical infrastructure would also put other sectors at risk.[137] Currently, many states utilize the federal government's National Response Framework and Emergency Support Function, a guide to responding to all types of disasters and emergencies.[138] However, this is a guide that assists in how to respond to a disaster or emergency, not how to maintain or enforce cybersecurity measures.[139] Even under this guide, the delivery and maintenance of those standards are often left to PUCs, who may not have authority over municipal utilities.[140] The complexity of the electric grid

122. Before the Colonial Pipeline attack, TSA maintained voluntary cybersecurity standards were enough to protect pipelines by allowing companies flexibility to counter threats. Shortly after the attack, TSA changed its views and issued mandatory cybersecurity rules on owners and operators of pipelines. While these rules are under review, TSA's decision to shift from voluntary to mandatory cybersecurity standards further cements the need to create base-level cybersecurity standards to better protect infrastructure from threats. *See* Shardul Desai & Marissa C. Serafino, *TSA's Pipeline of Cybersecurity Requirements,* Holland & Knight (Aug. 13, 2021), https://www.hklaw.com/en/insights/publications/2021/08/tsas-pipeline-of-cybersecurity-requirements [https://perma.cc/73K8-2MZQ].
123. *See* Anthony Jones, *NERC CIP and the Importance of Consistent Compliance*, ISPartners (Dec. 14, 2021), https://www.ispartnersllc.com/blog/nerc-cip-standards-overview/ [https://perma.cc/J4AZ-XKNM].
124. *See* Elizabeth Montalbano, *Updated: Secrecy Reigns as NERC Fines Utilities $10M Citing Serious Cyber Risks*, The Sec. Ledger (Feb. 1, 2019), https://securityledger.com/2019/02/secrecy-reigns-as-nerc-fines-utilities-10m-citing-serious-cyber-risks/ [https://perma.cc/9FBV-R4CZ] (to prevent further risk to the BPS system, the standard practice is to keep anonymity):
> The problems at the fined companies appear widespread. NERC cites a lack of management engagement and support for the CIP program; deficient documentation, training, and implementation of CIP standards; lack of communication between management levels in the company; and lack of communication between business units on who is responsible for which tasks.

125. *See Energy Sector*, Cybersecurity & Infrastructure Security Agency, https://www.cisa.gov/energy-sector [https://perma.cc/HU8L-8QDA].
126. 535 U.S. 1, 1 (2002).
127. 376 U.S. 205 (1964).
128. *See U.S. Environmental Protection Agency State Climate and Energy Technical Forum Background Document*, U.S. Env't Prot. Agency (May 20, 2010), https://www.epa.gov/sites/default/files/2016-03/documents/background_paper.pdf [https://perma.cc/42GA-DN4D]. PUCs are independent commissions in charge of maintaining the availability and reliability of the service provided by the utility among other functions. *Id.*
129. *See* Daniel Shea, *Cybersecurity and the ElectricGrid/The State Role in Protecting Critical Infrastructure*, NCSL (Jan. 24, 2020), https://www.ncsl.org/research/energy/cybersecurity-and-the-electric-grid-the-state-role-in-protecting-critical-infrastructure.aspx [https://perma.cc/8GT9-PZCL].
130. *Id.*
131. *See* GAO-21-81, *supra* note 6, at 23.
132. *Id.*
133. *Id.*
134. *Id.* at 24.
135. *See Cybersecurity Capability Maturity Model (C2M2)*, Off. of Cybersecurity, Energy Sec., & Emergency Response, https://www.energy.gov/ceser/cybersecurity-capability-maturity-model-c2m2 [https://perma.cc/4U9K-5648]. Cybersecurity Capability Maturity Model is a tool for "evaluating and improving cybersecurity" that was developed by DOE. It is voluntary and the aim is to help entities identify cybersecurity risks and make improvements.
136. *See* GAO-21-81, *supra* note 6, at 24.
137. *See generally id.*; *see also Critical Infrastructure Security and Resilience*, Cybersecurity & Infrastructure Sec. Agency 4 (Nov. 2019), https://www.cisa.gov/sites/default/files/publications/Guide-Critical-Infrastructure-Security-Resilience-110819-508v2.pdf [https://perma.cc/7CR4-JNNM] [hereinafter *Critical Infrastructure*].
138. *See National Response Framework*, Fed. Emergency Mgmt. Agency (Oct. 15, 2021), https://www.fema.gov/emergency-managers/national-preparedness/frameworks/response [https://perma.cc/3U6Y-W4BX].
139. *See id.*
140. *See* Nat'l Assoc. of Regul. Util. Comm'rs, Public Utility Commission Participation in GridEx V: A Case Study 1, 2 (2020), https://pubs.naruc.org/pub/611D3BFE-155D-0A36-3183-1E029DDF0B48 [https://perma.cc/9PWU-EMDX] (noting that most municipal utilities are often exempted to its application or only allow it in limited circumstances, which limits its effectiveness).

puts state regulators in a unique position of facilitating and coordinating between utilities, the public, and the state to lower transaction costs and barriers to mitigate cyber risks effectively, but many states have yet to pass significant legislation that would create cybersecurity standards.[141]

B. Comparison of State Regulations

In general, many states are operating at different stages of consideration and implementation of cybersecurity measures. In 2019, 16 states considered cybersecurity measures for the electric grid, while some other states have already begun to implement their cybersecurity policies.[142] The lack of a united effort to create cybersecurity measures across all states leaves the distribution industry vulnerable because hackers may target utilities in states that do not have established mandatory standards.[143] Essentially, a state without cybersecurity standards will be at greater risk of an attack.[144] Additionally, the interconnectedness of the energy sector could result in spillover, affecting other sectors.

In 2021, the National Governors Association reviewed eight states that have created governance bodies tasked with developing best practices for cybersecurity standards.[145] For instance, some states can rely on the delegation of the governor's authority to set cybersecurity standards to central governance bodies to improve critical infrastructure security.[146] In Indiana, this led to an increase in information-sharing, where over 85% of Indiana utilities provided information and formulated strategic cybersecurity partnerships between the public and private sectors.[147] In Washington, the governance body coordinated a partnership with the Cyber Team of the Washington National Guard and the Snohomish County Public Utility District ("PUD"), where the two conducted exercises to test for cyber vulnerabilities, leading to the creation of the Cybersecurity Guide for the Critical Infrastructure of Washington State.[148] Some states have begun to consider the cybersecurity of critical infrastructure. For example, some states, like Delaware, include a reference to critical infrastructure in their governing body's mission.[149] Another example includes Rhode Island, where state agencies and entities from critical infrastructure sectors cooperate as part of a state-led cybersecurity body.[150]

On the other hand, states that have taken a more proactive approach have relied on the federal structure for cybersecurity standards that they adapted to suit their needs. For example, California created the California Cybersecurity Integration Center, which operates similarly to Homeland Security's National Cybersecurity and Communications Integration Center ("NCCIC") by "monitoring threats, consolidating and analyzing reports on cyberattacks" and creating a cyber incident response team that coordinates with NCCIC as well as develop cybersecurity strategies for the state.[151] Another example is New York's Public Service Commission Office of Utility Security, which conducts on-site audits to test utilities' cybersecurity systems by comparing them to NERC CIPs.[152]

While states are finally beginning to consider implementing cybersecurity measures seriously, progress is slow in terms of where states are in creating legislation, and it remains that a vital part of America's critical infrastructure is left vulnerable.[153]

In addition to jurisdictional limitations, federal interests in electric distribution remain dismal, resting on the idea that a cyberattack would only cause local disruption.[154] In contrast, the GAO report found no indication that an attack on the distribution systems would *only* result in localized disruption.[155] The interdependence element is also a point of vulnerability because in the event of a cyberattack on the energy sector, both the energy sector and any other connected sector or entity will be affected, resulting in a greater loss of one or more lifeline functions.[156] Any disruption could impair the security and resilience of critical infrastructure, creating a domino effect upon numerous actors throughout the country. Thus, the federal government must step in and regulate the inconsistent application of cybersecurity measures to create a baseline of security that minimizes the vulnerabilities the electric grid faces.

141. *See* Sherina Maye Edwards et al., *Cybersecurity, Part 1 Opportunities and Challenges for State Utility Regulators*, Pub. Utils. Fortnightly (Feb. 2017), https://www.fortnightly.com/fortnightly/2017/02/cybersecurity-part-1?authkey=c4869ac2fb271e063b0930630283c52c7aba2cfba161060eadfcc5121603ca5f [https://perma.cc/96LA-5Z6K].
142. *See* Shea, *supra* note 129.
143. Carmody & Rueger, *supra* note 18 (while there was a general lack of mandatory standards across the entire pipeline infrastructure industry, the hack on Colonial Pipeline serves as a prime example of the vulnerabilities the energy sector faces and the consequential importance of mandating cybersecurity standards for critical infrastructure).
144. *See* Shea, *supra* note 129.
145. *See* Nat'l Governors Ass'n, Addressing Cybersecurity for Critical Energy Infrastructure Through State Governing Bodies 2 (Apr. 13, 2021), https://www.nga.org/center/publications/addressing-cybersecurity-for-critical-energy-infrastructure-through-state-governing-bodies/ [https://perma.cc/7KU9-NFU3] (the eight states reviewed in the report are: Indiana, Iowa, Louisiana, Maryland, Missouri, South Carolina, Texas, and Washington).
146. *Id.* at 3–4.
147. *Id.* at 4.
148. *Id.* at 5.
149. *See id.* at 8.
150. *See id.* at 8–9.
151. *See* Shea, *supra* note 129.
152. *See* Nat'l Governors Ass'n, Smart & Safe: State Strategies for Enhancing Cybersecurity in the Electric Sector 1, 8 (2019), https://www.nga.org/wp-content/uploads/2019/04/NGA-Smart-Safe-State-Strategies-for-Enhancing-Cybersecurity-in-the-Electric-Sector.pdf [https://perma.cc/2NKB-4PKH].
153. *See generally* Shea, *supra* note 129; Nat'l Governors Ass'n, Smart & Safe: State Strategies for Enhancing Cybersecurity in the Electric Sector, *supra* note 152.
154. *See* GAO-21-81, *supra* note 6, at 22.
155. *Id.*
156. *See Critical Infrastructure*, *supra* note 125, at 4; Cybersecurity and Infrastructure Security Agency, A Guide to Critical Infrastructure Security and Resilience 1, 6 (Nov. 2019), https://www.cisa.gov/sites/default/files/publications/Guide-Critical-Infrastructure-Security-Resilience-110819-508v2.pdf [https://perma.cc/M8WH-CVRH].

V. Authority

A. Generally

Increased digitalization and connectivity within the power grid, despite its benefits, creates vulnerabilities within the energy infrastructure. Accounting for 16% of all cyberattacks, according to Hornet Security, the energy sector is one of the most threatened sectors,[157] and Edison Electric experts report that the recent Covid-19 pandemic has caused an "uptick in attempted attacks."[158] Devices, such as smart meters, create vulnerabilities for hackers to take advantage of because it mixes operational technology with informational technology without ensuring operational technology has sufficient cyber protection.[159]

The jurisdictional split has created a regulatory gap, leaving the electric grid vulnerable to cyberattacks. The regulatory gap has created inconsistency in how cybersecurity measures are implemented in electric distribution. Moreover, the interconnectedness of the electric grid exacerbates the problem because the lack of cybersecurity standards in one segment of the grid leaves the entire electric grid vulnerable.[160]

To protect the grid, the federal government must take a more proactive approach and align electric distribution with electric generation and transmission cybersecurity standards. Uniformity and consistency of cybersecurity standards will strengthen the electric grid from cyberattacks, keeping the energy sector aligned with the Sector-Specific Plan ("SSP").[161] DOE, the Sector-Specific Agency ("SSA") for energy,[162] created the SSP to identify and protect national security interests.[163] The SSP for energy provides a "coordinated approach that will be used to establish national priorities, goals, and requirements for critical infrastructure and key resources (CI/KR)."[164] However, the SSP is not a guide for a course of action. Rather, it is a culmination of consensus and depiction of how far the sector has come and its vision moving forward.[165] Because the federal government is able to oversee and influence the direction of the energy sector generally,[166] they should actively embark on creating an actionable plan that will help the states increase cybersecurity in electric distribution.

B. FERC Tether

Earlier in this Note, cases like *New York v. Federal Energy Regulatory Commission* and *FPC v. Southern California Edison Co.* revealed that FERC enjoys broad jurisdiction over the electric grid by asserting federal jurisdiction over conduct tethered to transmissions and the wholesale market regardless of whether that conduct traditionally fell under state jurisdiction.[167] This Note argues, based on this more lenient view from the Supreme Court in the aforementioned cases, FERC and NERC have the authority to extend their jurisdiction and mandate cybersecurity standards over electric distribution.

The Supreme Court interpreted the FPA as a line drawn to keep states out of the wholesale market and gave FERC increased jurisdiction over matters affecting the wholesale market that Congress did not explicitly hand over to state jurisdiction.[168] This interpretation indicates FERC and NERC have the requisite jurisdiction over matters tethered to either transmissions or wholesale sales.

One example is found in *Federal Power Commission v. Florida Power & Light Co.* ("*FP&L*").[169] In *FP&L*, the Supreme Court considered whether FERC had exceeded its jurisdiction over FP&L.[170] This suit deals with FERC asserting jurisdiction over FP&L despite its transmission lines falling within the state.[171] 16 U.S.C. 824(b) states that FERC has jurisdiction over "the transmission of electric energy in interstate commerce and . . . the sale of electric energy at wholesale in interstate commerce, but . . . not (over) any other sale of electric energy," meaning that the federal government regulates energy that leaves or enters a state.[172] However, FERC claimed it had jurisdiction over FP&L because it sent its electricity to a bus[173] where another electricity company, Florida Power Corp ("Corp"), also sent its electricity. Corp had transmission lines that crossed the state border into Georgia.[174] Using an expert witness,

157. *See* Nicholas Newman, *Why Is the Energy Sector so Vulnerable to Hacking?*, ITPro (Oct. 7, 2021), https://www.itpro.com/security/cyber-attacks/361142/why-is-the-energy-sector-so-vulnerable-to-hacking [https://perma.cc/XR5H-6QBD].
158. *Id.*
159. *See* Shea, *supra* note 129.
160. *See generally* GAO-21-81, *supra* note 6.
161. *See Sector-Specific Agencies*, U.S. Fed. Emergency Mgmt. Agency, https://emilms.fema.gov/is_0860c/groups/48.html [https://perma.cc/R3HV-JD34] (last visited Mar. 6, 2022):
> Presidential Policy Directive 21 (PPD-21) designated responsibility for various Federal Government departments and agencies to serve as Sector-Specific Agencies (SSAs) for each of the critical infrastructure sectors. SSAs are responsible for working with the Department of Homeland Security to implement the National Infrastructure Protection Plan Sector Specific Plan. The Sector Specific Plan is a model and risk management framework used to develop protective programs, resilience strategies and related requirements; and provide sector-level critical infrastructure protection guidance.

162. *See Energy Security Provision Within the Fixing America's Surface Transportation Act (FAST Act)*, Off. of Cybersecurity, Energy Sec. & Emergency Response, https://www.energy.gov/ceser/energy-security-provision-within-fixing-america-s-surface-transportation-act-fast-act [https://perma.cc/CX39-HCK4].
163. *See Sector-Specific Agencies*, *supra* note 161.
164. *See National Infrastructure Protection Plan Sector-Specific Plans*, U.S. Dep't of Homeland Sec. 1, https://www.dhs.gov/xlibrary/assets/nipp_sctrplans.pdf [https://perma.cc/THX2-5UPN].
165. *See National Infrastructure Protection Program Sector-Specific Plans*, U.S. Food & Drug Admin. (May 21, 2007), https://www.fda.gov/food/food-defense-programs/national-infrastructure-protection-program-sector-specific-plans [https://perma.cc/7VJM-BHFP].
166. As federal agencies, DOE and FERC both play a role in carving out the future of energy policy for the United States. *See generally About Us,* Dep't of Energy, https://www.energy.gov/about-us [https://perma.cc/38G3-XTUM] (last visited Nov. 11, 2022); Fed. Energy Regul. Comm'n Strategic Plan Fiscal Years 2022-2026 1 (Mar. 29, 2022).
167. New York v. FERC, 535 U.S. 1, 17 (2002) ("there is no language in the statute limiting FERC's transmission jurisdiction to the wholesale market . . ."); Dennis et al., *supra* note 67, at 11.
168. Dennis et al., *supra* note 67, at 10–11.
169. *See* Fed. Power Comm'n v. Fla. Power & Light Co., 404 U.S. 453 (1972).
170. *See id.* at 453.
171. *See id.*
172. *Id.* at 454.
173. *Id.* at 453 (a bus is a transmission line into which other subsidiary lines connect).
174. *Id.* at 456.

FERC argued that at the bus, FP&L and Corp's electricity commingled, like molecules of water from different sources co-mingling at a reservoir, before it was sent out—which included exporting out to Georgia.[175] Once commingled, it was impossible to tell which electron belonged to FP&L, so there is no way to prove that their electricity did not leave the state.[176]

The *FP&L* court held that there was substantial evidence, based on expert testimony, to support FERC's assertion of jurisdiction.[177] The Court established the "co-mingling" test wherein, particular facilities fall under FPA jurisdiction "if any portion of the electricity involved is transmitted to or from another state" even if it was done indirectly.[178] In essence, because the co-mingling of electrons made it impossible to determine whether FP&L's electricity crossed state lines, FERC was able to assert jurisdiction under interstate commerce and the co-mingling test. The co-mingling tests increases the likelihood of courts granting FERC jurisdiction when there is an interstate element tethered to conduct that falls under state jurisdiction because it can directly affect wholesale sales in any capacity.[179]

A more direct example is *Federal Energy Regulatory Commission v. Electric Power Supply Ass'n* ("*EPSA*"), where the Supreme Court determined FERC has jurisdiction over matters affecting the wholesale market.[180] Currently, the wholesale market most commonly works by having regional BPS operators buy and pool electricity from which they then sell to utilities.[181] All electricity is stacked by bids from lowest to highest until all electricity requests from distributors are met.[182] Every distributor must pay the highest accepted bid.[183] For example, if generating companies A, B, C, and D each sell the electricity they produced at $5 each for 10 units of electricity, $8 each for eight units, $10 each for 14 units, $14 each for 17 units, respectively, and distribution companies X, Y, and Z, combined, need 21 units of electricity, then the total amount each distribution entity will pay is $10 per unit of electricity. Sudden demand increases can cause prices to increase dramatically and may also affect reliability.[184]

In order to ease the burden on the electric grid, keep costs low, and maintain reliability, wholesale market operators created a program to pay customers not to use electricity during peak times.[185] FERC Order 745 mandated "demand response providers must be compensated for reducing electricity load at the same rates as if they met that demand with generated electricity."[186] EPSA sued, arguing Order 745 exceeded jurisdiction by attempting to regulate retail rates.[187] First, the Supreme Court found FPA section 206 gave FERC the requisite authority to issue an order to remedy "any rule, regulation, practice, or contract affecting" a rate or charge as long as FERC addresses a practice that directly affects the wholesale market.[188] Second, the Court held that the Order did not regulate retail rates because FERC is only affecting the quantity or terms of retail rates.[189] It is impossible to keep wholesale and retail rates in isolated corners, and FERC's responsibility consists of maintaining the reliability of the wholesale market, so it is inevitable that changes made to improve the wholesale market would have an effect on retail rates.[190] With *EPSA*'s holding, the Supreme Court clearly extended FERCs jurisdictional reach to a "wide range of entities whose conduct affects wholesale rates directly."[191]

Most recently, the *National Association of Regulatory Utility Commissioners ("NARUC") v. Federal Energy Regulatory Commission* dealt with FERC's ability to regulate the wholesale market against state jurisdiction over facilities used in local distribution under the *EPSA* framework.[192] FERC Order 841 directed regional transmission organizations ("RTO") and independent system operators ("ISO"),[193] part of the wholesale market, to accommodate electric storage resources ("ESRs") even if they were "located within the distribution side or behind a retail customer's meter."[194] NARUC argued that ESRs located within distribution facilities and retail fell under state jurisdiction and FERC could not prohibit states from determining if ESRs would participate in the wholesale market.[195]

EPSA instructs courts to consider three factors: (1) if the challenged practice directly affects wholesale rates; (2) if FERC is attempting to regulate state-regulated facilities; and (3) if the outcome of the issue does not conflict with FPA's core purposes" of "curb[ing] prices and enhanc[ing] reliability in the wholesale electricity market."[196] Under the

175. *See Fla. Power & Light Co.*, 404 U.S. at 463 (1972).
176. *See id.* at 466–67 (the Court notes that identifying each electron needed to make distinctions between FP&L and Corp's electricity is practically unobtainable and that FERC has adequately established interstate commerce).
177. *See id.* at 469.
178. *See* Dennis et al., *supra* note 67, at 11.
179. *See Fla. Power & Light Co.*, 404 U.S. at 471 (1972) (Douglas, J., dissenting) (noting that the co-mingling test gives FERC substantial power over privately owned interconnected facilities).
180. *See* Fed. Energy Regul. Comm'n v. Elec. Power Supply Ass'n, 577 U.S. 260 (2016), as revised (Jan. 28, 2016).
181. *See id.* at 283.
182. *Id.* at 283–84.
183. *Id.*
184. *Id.* at 269.
185. *Id.* at 265.
186. *See* Robert Walton, *What the Supreme Court Decision on FERC Order 745 Means for Demand Response and DERs*, Utility Dive (Feb. 3, 2016), https://www.utilitydive.com/news/what-the-supreme-court-decision-on-ferc-order-745-means-for-demand-response/413092/#:~:text=FERC%20Order%20745%2C%20issued%20in,that%20demand%20with%20generated%20electricity [https://perma.cc/DMU2-YXBQ].
187. *See Elec. Power Supply Ass'n*, 577 U.S. at 265 (2016).
188. Dennis et al., *supra* note 67, at 15.
189. *Id.*
190. *Id.* at 15–16.
191. *See* Joel B. Eisen, *FERC's Expansive Authority to Transform the Electric Grid*, 49 U.C. Davis L. Rev. 1783, 1788 (2016).
192. *See generally* Nat'l Ass'n of Regul. Util. Comm'rs v. FERC, 964 F.3d 1177 (D.C. Cir. 2020).
193. *See About 60% of the U.S. Electric Power Supply Is Managed by RTOs*, U.S. Energy Info. Admin. (Apr. 24, 2011), https://www.eia.gov/todayinenergy/detail.php?id=790 [https://perma.cc/44Q8-L788] (RTOs and ISOs are voluntary regional bulk power system operators. About 60% of the electricity is managed by RTOs. The main function of these entities is to ensure "reliability and optimize supply and demand bids for wholesale electric power.").
194. Seth T. Lucia, *D.C. Circuit Upholds FERC's Electric Storage Rule*, Morrison & Foerster (July 14, 2020), https://www.mofo.com/resources/insights/200714-dc-circuit-upholds-ferc-electric-storage-rule.html [https://perma.cc/SGB3-FBBE]; *see Nat'l Ass'n of Regul. Util. Comm'rs*, 964 F.3d at 1183.
195. *Id.* at 1186–87.
196. *Id.* at 1186.

EPSA test, the court found that the first factor was met—prohibition of state-imposed participation bans directly affected the wholesale market.[197] NARUC focuses on the second factor, stating that FERC is acting unlawfully by blocking states and directly regulating entry to the federal market.[198] The court disagreed and found that the Order preempts states from blocking participants' access to RTO/ISO participation because all matters affecting the wholesale market fall under FERC jurisdiction.[199] The court acknowledged that the holding will place an operational burden on distribution entities but found that the FPA permits this effect, especially because nothing in the Order directly regulates distribution, and states can still manage those facilities in other aspects like reliability.[200]

The purpose behind FERC's Order was to balance electricity supply and demand by including ESRs since they can store and inject electricity back into the market.[201] And so, the courts interpreted the FPA broadly enough for FERC to exercise its authority over maintaining the wholesale market by allowing FERC to extend its authority to practices that directly affect the wholesale market, even if it could create unintended consequences or limitations to state authority.

C. A Case for Cyberattacks "Directly Affecting" Wholesale Market

Here, an argument can be made that a cyberattack in electric distribution can directly affect the wholesale market. According to the GAO report, in 2018, university researchers found that hackers could hack smart technology and turn it into botnets that they could then use "to launch a coordinated attack aimed at increasing or decreasing the electricity demands across distribution systems to disrupt grid operations."[202] A hacker could instruct botnets to draw in more electricity to increase demand.[203] This would affect the wholesale market because the American electric grid, aside from Texas, relies on RTOs and ISOs, so the higher the demand for electricity, the higher the price of the wholesale bids.[204] Essentially, the increased use of electricity from one distribution entity could raise electricity prices throughout the wholesale market. Moreover, as the Texas winter storm showed, a sudden, unprecedented increase in electricity demand can cause a blackout and strain reliability.[205]

By adhering to *EPSA*'s three-factor test,[206] this Note argues that FERC and NERC have the requisite authority to mandate cybersecurity standards over distribution because the inconsistent application of cybersecurity by states directly affects the wholesale market as it exposes the grid to vulnerabilities. This Note supports extending FERC jurisdiction over states to mandate cybersecurity in distribution entities and fill the regulatory gap.

Under the first factor, as mentioned in the above hypothetical,[207] the inconsistent practice of cybersecurity directly affects wholesale rates because the resulting vulnerabilities could be used to launch a cyberattack that impairs the grid's reliability. Under the second factor, FERC and NERC would not overreach authority. The aim is to align distribution with the rest of the grid's cybersecurity regulation. However, like in *NARUC,* FERC would not be directly regulating distribution entities, and states would still retain their regulatory tools.[208] With the SIP solution, the only difference would be that NERC would approve the SIP based on existing CIP standards, but the creation and implementation would be left to the states. Similarly, the third factor is not a problem because the intended effect of SIPs is to protect the reliability of the wholesale market. Before this Note can address how the federal government would implement the SIP solution, it is essential to discuss what it is.

VI. SIPs Generally

To remedy the regulatory gap, this Note's solution is to create an SIP framework. SIPs will fill the regulatory gap and allow the federal government to establish cybersecurity standards that are flexible enough to allow states to maintain their regulatory power and address the needs and concerns of the state. These considerations could possibly include the physical location, size, and capacity of the distribution entity, the number of assets they have, the type of systems they use, and the differences in law that affect operation. The goal is to force states to address the lack of cybersecurity for distribution by mandating SIPs to ensure electric critical infrastructure is protected with base-level security against cyberthreats.

SIPs were first introduced in the CAA.[209] The U.S. Environmental Protection Agency ("EPA") defines an SIP as a collection of documents used to enforce standards mandated by a law or statute.[210] SIPs are created and used by states to convey how the state will meet the National

197. *Id.*
198. *Id.* at 1186–87.
199. *Id.* at 1187.
200. *See Nat'l Ass'n of Regul. Util. Comm'rs*, 964 F.3d at 1185.
201. *See Energy Storage Resources: A Year in Review*, Power (Jan. 1, 2019), https://www.powermag.com/energy-storage-resources-a-year-in-review/#:~:text=An%20electric%20storage%20resource%20is,include%20batteries%2C%20pumped%20storage%20facilities [https://perma.cc/5LMA-WYX9].
202. *See* GAO-21-81, *supra* note 6, at 18.
203. *See id.*
204. *See generally* Kathryne Cleary & Karen Palmer, *US Electricity Markets 101,* Res. for the Future (Mar. 2, 2020), https://www.rff.org/publications/explainers/us-electricity-markets-101/ [https://perma.cc/WSR6-3N3R].
205. *See* Plumer, *supra* note 33.
206. *See* Fed. Energy Regul. Comm'n v. Elec. Power Supply Ass'n, 577 U.S. 260, 277 (2016).
207. Referring to the "A Case for Cyberattacks "Directly Affecting" Wholesale Market" section of this Note.
208. *See* Nat'l Ass'n of Regul. Util. Comm'rs v. FERC, 964 F.3d 1177, 1187 (D.C. Cir. 2020).
209. *See Evolution of the Clean Air Act*, U.S. Env't Prot. Agency, https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act [https://perma.cc/8K5K-2GMQ] (last visited Oct. 22, 2022).
210. *See Basic Information about Air Quality SIPs*, U.S. Env't Prot. Agency, https://www.epa.gov/air-quality-implementation-plans/basic-information-about-air-quality-sips [https://perma.cc/67G3-6AL7] (last visited Oct. 22, 2022).

Ambient Air Quality Standards ("NAAQS") under the CAA.[211] CAA NAAQS are identified based on health and welfare standards determined by scientific and medical information.[212] SIPs are unique because they are customized to meet the regional air quality needs, so the goals and implementation vary from state to state.[213] Although states must comply with a federal statute in the creation of SIPs, the implementation and enforcement is delegated to state and local governments.[214] SIPs help address air quality issues in a flexible manner based on factors like geographic location and different sources found in the state.[215]

The amount of work put behind the creation of an SIP is onerous for states.[216] It requires the states to expertly plan out how to meet federal standards while giving states the freedom to address their specific needs. However, SIPs under the CAA have proven that the benefits outweigh the costs.[217] For instance, it is estimated that the cost of meeting the 1990 CAA provisions cost $65 billion in 2020, but the benefits from reduced death and illness and increase in economic and environmental conditions is estimated to be around $2 trillion by 2020.[218] Additionally, from 1970 to 2020, the emissions from all six pollutants combined dropped 78%, showing that SIPs do work.[219] The CAA only created SIPs to be used as a tool to aid states in monitoring pollutants,[220] meaning that under the CAA, SIPs do not extend to other issues. This proposed solution aims to use the SIP framework to create a similar state-led framework overseen by FERC. For simplification purposes, this proposed solution will also be referred to as SIPs.

VII. Solution: Cybersecurity and SIPs

SIPs are a product of the CAA and are found in the statute for the explicit purpose of maintaining air quality.[221] This Note proposes using SIPs as a guide to create a similar framework for electric distribution in order to establish standards that maintain a foundational baseline for cyber security that will be maintained by FERC. These SIPs will help align electric distribution cybersecurity with the rest of the grid and will ensure electric critical infrastructure can remain secure and resilient against cyberattacks, with reduced vulnerabilities and faster recovery times.[222] To maintain cohesiveness with the rest of the electric grid, SIPs will follow standards adopted from CIPs.

This SIP proposal process would look like that of SIPs under the CAA and would include setting standards and objectives, designing and implementing strategies, and assessing and monitoring.[223] Within this SIP framework, FERC and NERC would be the two entities responsible for adopting and reframing CIPs into standards for electric distribution. FERC would also establish a timeline for states to develop an SIP that would be subject to approval. States would be responsible for working with utilities and other local stakeholders to develop an actionable plan. States can also look toward using the NIST Cybersecurity Framework and the Cybersecurity Capability Maturity Model ("C2M2") as guides to help plan and research how to ensure cybersecurity baselines.[224] Finally, once the SIP has been approved, states will be responsible for performing audits and performance reviews and ensuring that cybersecurity measures are maintained, and electricity reliability is unaffected. States would also submit their findings from those audits and performance reviews to FERC and NERC for future standards and objectives.

A. How FERC and NERC Can Implement SIPs

Based on the precedent set by *New York v. FERC*,[225] and *Fed. Power Comm'n v. Fla. Power & Light Co.*,[226] as well as the *EPSA* test,[227] FERC should be able to issue an order authorizing NERC to create an SIP framework based on CIP standards for states to comply with. Below is an example of a CIP standard that can be used to create an SIP standard for states to follow.

> **CIP-002-5.1a Cyber Security—BES Cyber System Categorization**.
>
> This CIP requires an entity to group assets based on high, medium, or low potential impact on the power grid.[228] Understanding the assets under a company's liability is important in helping identify what needs protecting and how much protection it needs.[229]

211. *See Evolution of the Clean Air Act*, *supra* note 209.
212. *See* Kenneth Colburn et al., *State Implementations Plans: What Are They and Why do They Matter?*, RAP 8 (July 2012), http://www.raponline.org/wp-content/uploads/2016/05/rap-stateimplementationplans-2012-jul-17.pdf [https://perma.cc/JVJ3-TU7J].
213. *See Our Air Quality Implementation Plan*, Wash. State Dep't of Ecology, https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans [https://perma.cc/9ARJ-ZJC5] (last visited Oct. 28, 2022).
214. *See* Colburn et al., *supra* note 212, at 7.
215. *Id.*
216. *Id.* at 18.
217. *Id.*
218. *Id.*
219. *See Progress Cleaning the Air and Improving People's Health*, U.S. Env't Prot. Agency (Mar. 9, 2022), https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health [https://perma.cc/G63D-YDT5].
220. *See Basics of SIP Requirements*, U.S. Env't Prot. Agency (Nov. 15, 2021), https://www.epa.gov/ground-level-ozone-pollution/basics-sip-requirements [https://perma.cc/FM6K-QG6Q].
221. *See* Colburn et al., *supra* note 212, at 4.
222. *See Energy Sector Specific Plan*, Cybersecurity & Infrastructure Sec. Agency 1, 17, 28 (2015), https://www.cisa.gov/publication/nipp-ssp-energy-2015 [https://perma.cc/4DR9-FPUG] (vision statement).
223. *See Basics of SIP Requirements*, U.S. Env't Prot. Agency (Nov. 15, 2021), https://www.epa.gov/ground-level-ozone-pollution/basics-sip-requirements [https://perma.cc/XKD9-RR3S].
224. *See generally Cybersecurity Framework*, Nat'l Inst. of Sci. & Tech., https://www.nist.gov/industry-impacts/cybersecurity-framework [https://perma.cc/FRS8-P9T5] (last visited Oct. 22, 2022); *Capability Maturity Model (C2M2)*, U.S. Dep't of Energy, https://www.energy.gov/ceser/cybersecurity-capability-maturity-model-c2m2 [https://perma.cc/ARZ2-WF6A] (last visited Oct. 22, 2022).
225. *See* 535 U.S. 1 (2002).
226. *See* 404 U.S. (1972).
227. Nat'l Ass'n of Regul. Util. Comm'rs v. FERC, 964 F.3d 1177, 1185 (D.C. Cir. 2020).
228. *See What Are the NERC CIP Standards and Why Should You Care?*, Verve (Oct. 18, 2021), https://verveindustrial.com/resources/blog/what-are-the-nerc-cip-standards-in-ics-security/ [https://perma.cc/CTZ2-HVYW].
229. *See* Peacock, *supra* note 106.

The key components of CIP-002-5.1a are identification and categorization to ensure that all critical assets are appropriately accounted for and protected.[230] A potential SIP standard from CIP-002-5.1a could be:

> This SIP standard, pursuant to CIP-002-5.1a, requires a distribution entity to group assets based on high, medium, or low potential impact on the power grid. Identification of cyber systems and other assets, and their purpose, falls under the entity's liability when determining what needs protecting and how much protection it needs.

Under this SIP, states can determine how to identify and categorize the process, assets, and what states consider important to protect the electric grid. Note that under this solution, a state's SIP would still have to be approved by NERC to ensure that it can effectively protect the wholesale market from vulnerabilities. With this method, it would not matter whether, for example, Maryland's SIP was different from Arizona's because NERC can reject a proposal that it deems does not adequately protect the wholesale market by adequately protecting electric distribution. Like SIPs under the CAA, NERC will be able to implement a federal implementation plan created by the government if states fail to create a plan that NERC approves subject to change upon the approval of a state's SIP.[231] The rest of the process would also be like the SIPs found under the CAA in that the SIP would be put up for public comment and then receive final input from DOE before registering it in the *Federal Register*.[232]

The purpose of creating SIPs for cybersecurity in electric distribution is to have states take initiative and try to create a plan to mitigate cyber threats. By adding a layer of federal involvement, pressure is placed on states to ensure electric-critical infrastructure is just as secure as the rest of the electric grid. To further help and encourage states to draft SIPs, the federal government should allocate resources such as experts and monetary incentives to lessen the burden.

Essentially, inconsistent cybersecurity in electric distribution is the same as not having any cybersecurity at all because a hacker can exploit a single vulnerability.[233] And, unfortunately, the complex nature of the malware and the covert nature of a hack make it hard for the computer system and experts to identify the issue until it is too late.[234] Therefore, implementing SIPs for electric distribution cybersecurity is important because creating baseline measures will best help strengthen the electric grid's resilience against cyberattacks and maintain reliability.

B. *Why This Solution*

One concern is that an SIP-inspired framework to mandate cyber security standards may not function exactly as one might expect SIPs under the CAA. SIPs under the CAA have clearly established NAAQs that set specific limits on pollutants considered harmful.[235] These NAAQs allow states to create plans that reduce identified pollutants to decrease their effects on the environment and the health of constituents in that state.[236] But cybersecurity standards may be harder to identify than NAAQs standards. As technological advances allow for new ways to conduct a cyberattack, cyber threats become much harder to identify than pollutants.[237]

Despite the challenge to counter all types of cyber threats, NERC has already established CIP standards for the electric generation and transmission sectors that establish appropriate security controls to protect BPS.[238] These CIP standards set a framework for an entity to identify critical assets, establish policies to monitor them, and require entities to use tools such as firewalls and information technology controls to limit access to assets.[239] By adopting and reframing CIP standards under an SIP framework, electric distribution entities can continue to provide consistent, reliable power with a baseline set of cybersecurity measures.[240] Essentially, this SIP framework will help set parameters for cybersecurity that are aimed at strengthening the entity's hardware and software.

A concern that may arise with using an SIP-inspired framework to mandate cyber security standards is whether they will work at all. SIPs under the CAA have clearly established NAAQS that set specific limits on certain pollutants considered harmful.[241] These NAAQS are properly defined and identified to allow states to create plans that target reducing those pollutants from affecting the environment and the health of constituents in that state.[242] One could argue that, unlike NAAQS standards, cybersecurity standards could be more obscure. Whereas pollutants are easily identified, it is hard to physically identify all cyber

230. *See* Awati, *supra* note 115.

231. *See Basic Information About Air Quality FIPs*, U.S. Env't Prot. Agency (Aug. 5, 2022), https://www.epa.gov/air-quality-implementation-plans/basic-information-about-air-quality-fips [https://perma.cc/BFD6-ZD7K].

232. *See State Implementation Plan (SIP)*, S.C. Dep't of Health & Env't Control, https://scdhec.gov/environment/your-air/most-common-air-pollutants/about-ozone/state-implementation-plan-sip [https://perma.cc/Q3JZ-DW2N] (last visited Oct. 28, 2022).

233. *See How Hackers Hack 101: The Use of Vulnerabilities & Exploits*, Website Sec. Store (July 19, 2021) https://websitesecuritystore.com/blog/how-do-hackers-hack/ [https://perma.cc/DCX5-XGUJ].

234. *See* Chuck Brooks, *Alarming Cyber Statistics for Mid-Year 2022 That You Need to Know,* Forbes (June 3, 2022), https://www.forbes.com/sites/chuckbrooks/2022/06/03/alarming-cyber-statistics-for-mid-year-2022-that-you-need-to-know/?sh=4c9c16d37864 [https://perma.cc/GM23-ST8R].

235. *See NAAQS Table*, U.S. Env't Prot. Agency (Apr. 5, 2022), https://www.epa.gov/criteria-air-pollutants/naaqs-table [https://perma.cc/FR4B-QSSU].

236. *See Basics of SIP Requirements*, U.S. Env't Prot. Agency (Nov. 15, 2021), https://www.epa.gov/ground-level-ozone-pollution/basics-sip-requirements [https://perma.cc/LZ83-83G5].

237. *See* Albinson et al., Future of Risk in the Digital Era Transformative Change. Disruptive Risk 1, 10 (2019).

238. *See* Rahul Awati & Ben Cole, *North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP)*, TechTarget (Mar. 2022), https://www.techtarget.com/searchsecurity/definition/North-American-Electric-Reliability-Corporation-Critical-Infrastructure-Protection-NERC-CIP#:~:text=The%20North%20American%20Electric%20Reliability,the%20cybersecurity%20aspects%20of%20BES [https://perma.cc/4DLD-CRZ2].

239. *See id.*

240. *See id.*

241. *See NAAQS Table*, U.S. Env't Prot. Agency (Apr. 5, 2022), https://www.epa.gov/criteria-air-pollutants/naaqs-table [https://perma.cc/FR4B-QSSU].

242. *See Basics of SIP Requirements*, U.S. Env't Prot. Agency (Nov. 15, 2021), https://www.epa.gov/ground-level-ozone-pollution/basics-sip-requirements [https://perma.cc/LZ83-83G5].

threats, especially as technological advances allow for new ways to conduct a cyberattack.[243] While it may be hard to counter all types of cyber threats, NERC has already established CIP standards for the electric generation and transmission sectors that focus on ensuring there are appropriate security controls to protect BPS.[244] These CIP standards set a framework for an entity to identify critical assets, establish policies to monitor them, and require entities to use tools such as firewalls and information technology controls to limit access to assets.[245] By adopting and reframing CIP standards under an SIP framework, electric distribution entities can continue to provide consistent, reliable power with a baseline set of cybersecurity measures.[246] Essentially, this SIP framework will help set parameters for cybersecurity that are aimed at strengthening the entity's hardware and software.

A big question is whether creating cybersecurity SIPs will work. A valid concern to this proposed solution is that there are too many elements for states to consider, such as the type of entity, its size, location, and finding a way to balance those factors while ensuring that the quality and reliability of the power remain. In other words, this solution might place a burden on states. While that may be true to some extent, states already have the responsibility of overseeing electric distribution and by extension, its cybersecurity.[247] Therefore, the SIP framework would not add additional workload to states. Rather, this proposed solution can serve to streamline efforts taken by states. The underlying goal of this proposed solution is to have states take a more active role in addressing this concern that many have been slow to react to. Instead, this proposed solution may be better for states. The SIP solution proposal includes access to federal government experts, it would increase communication between states on entities, give more access to resources to, and provide monetary assistance from the federal government.

Another concern with this proposed solution may be the added burden on electric distribution companies, especially smaller or more rural ones. While it is true that the cost of implementing cybersecurity measures may be expensive, the consequences of not implementing cybersecurity may be even more so. In fact, small businesses are more likely to fall prey to a cybercriminal than big businesses[248] and may be more vulnerable because they have valuable information with fewer resources dedicated to cybersecurity.[249] It is also important to note that the power grid is critical infrastructure, so establishing cybersecurity measures may be part of the cost of doing business. Looking back at the SolarWinds attack, that hack even affected government agencies and showed that "companies can be unknowingly vulnerable if there is just one weak link in their supply chain."[250] Likewise, here, distribution companies, due to the interconnectedness of the grid, may impair the availability and reliability of electricity elsewhere if such an attack were to occur.

Overall, the proposed SIP framework stands to help states and electric distribution entities better protect the electric grid. It allows for a flexible approach to meet the needs of companies while ensuring that electric distribution is aligned with the rest of the power grid in protecting electric critical infrastructure.

VIII. Conclusion

This Note discusses the importance of cybersecurity amid an unprecedented number of cyber threats. The electric grid is a crucial piece of infrastructure vital to maintaining the functionality of life in the United States. An attack on the electric grid, therefore, is a matter of national security. The regulatory gap has left the United States exposed to vulnerabilities in the electric distribution infrastructure, putting the entire grid at risk of a cyberattack. FERC's extended jurisdiction under the *EPSA* test[251] will allow the federal government to close that gap. Additionally, it is still important to implement the distribution of cybersecurity by cooperating with states, as they are most likely to interact with distribution entities. Therefore, SIPs will provide the best solution because they will respect state jurisdiction while acknowledging the interconnectedness of the electric grid. Adopting SIPs to create federally mandated cybersecurity standards will allow the United States to form a more united front against any future cyberattack, leaving electric grid entities in a better place to protect themselves.

243. *See* Albinson et al., Future of Risk in the Digital Era Transformative Change. Disruptive Risk 1, 10 (2019).
244. *See* Rahul Awati & Ben Cole, *North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP)*, TechTarget (Mar. 2022), https://www.techtarget.com/searchsecurity/definition/North-American-Electric-Reliability-Corporation-Critical-Infrastructure-Protection-NERC-CIP#:~:text=The%20North%20American%20Electric%20Reliability,the%20cybersecurity%20aspects%20of%20BES [https://perma.cc/4DLD-CRZ2].
245. *See id.*
246. *See id.*
247. *See* Shea, *supra* note 129.
248. *See* Taylor Armerding, *Why Criminals Pick on Small Business*, CSO (Jan. 12, 2015, 4:04 AM), https://www.csoonline.com/article/2866911/why-criminals-pick-on-small-business.html [https://perma.cc/5Z8P-DNWH].
249. *See* Krystal Triumph, *Cybersecurity Costs for Small Businesses*, Atlantic IT, https://www.atlantic-it.net/cybersecurity-costs-for-small-businesses/ [https://perma.cc/FC26-R4Y4] (last visited Oct. 22, 2022).
250. *See* Hannah Murphy, *Cyber Attackers: If You Can't Stop Them, Disrupt Them, Disrupt Them*, Fin. Times (May 31, 2022), https://www.ft.com/content/ec0d2bb7-d135-4f63-b950-12b2ac44590a [https://perma.cc/KX88-FANR].
251. *See* FERC v. Elec. Power Supply Ass'n, 577 U.S. 260, 277 (2016).

FEEDING AMERICA: HOW TO INCREASE TRANSPARENCY AND MITIGATE THE HARMFUL EFFECTS OF CONCENTRATED ANIMAL FEEDING OPERATIONS

Monishaa Suresh*

ABSTRACT

Around the country, Concentrated Animal Feeding Operations ("CAFOs") serve as industrial livestock operations to provide meat, the majority of which is beef, pork, and chicken. These confined holding areas for large quantities of livestock result in massive animal waste problems that hurt ecosystems and surrounding communities through the discharge of harmful chemicals into the water and air. Though CAFOs require permits under the Clean Water Act's ("CWA's") National Pollutant Discharge Elimination System permitting program to open and conduct operations, there is no comprehensive data on the size and levels of pollution of all existing CAFOs. Ultimately, to begin combatting the ecological harm and environmental injustice caused by CAFOs, the U.S. Environmental Protection Agency ("EPA") must use its authorization under Section 308 of the CWA to require comprehensive identifying information from all existing operations to form a database available to the public. This Note sets out a clear method of data collection for such an EPA-run, publicly available CAFO information registry. The proposed registry would have basic information about the operation itself, such as the type and quantity of animals held, and environmental factors such as the type and number of pollutants and waste resulting from the facility. This registry would give both the government and the general public the necessary tools to begin combatting the harmful effects caused by these operations.

I. Introduction

Currently, Maryland's coastal agricultural sector is the largest source of polluted runoff into the Chesapeake Bay, with a majority of the polluted runoff coming from poultry farms.[1] However, pollution from livestock operations is not a problem unique to Maryland. Around the country, livestock operations remain unchecked in terms of what they discharge into the water and air, ultimately harming the surrounding environments and communities.[2] These large-scale industrial livestock operations are known as Concentrated Animal Feeding Operations ("CAFOs").[3] Though CAFOs are currently regulated under the National Pollutant Discharge Elimination System ("NPDES") permitting program, the existing regulations surrounding the operations are inadequate and no match for the harmful effects they cause.[4] Currently, the U.S. Environmental Protection Agency ("EPA") does not have comprehensive information on CAFOs and therefore operates with the knowledge that

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1. *Poultry Pollution*, Sierra Club Md. Chapter, https://www.sierraclub.org/maryland/poultry-pollution [https://perma.cc/CND7-BSY5] (last visited Dec. 2, 2022).

2. *See* Carrie Hribar, Understanding Concentrated Animal Feeding Operations and Their Impact on Communities, Nat'l Ass'n of Loc. Bds. of Health (Mark Schultz ed., 2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf [https://perma.cc/7PFV-279P].

3. *Why Are CAFOs Bad?*, Sierra Club Mich. Chapter, https://www.sierraclub.org/michigan/why-are-cafos-bad [https://perma.cc/NV7V-M3YR] (last visited Dec. 2, 2022).

4. *Compare Animal Feeding Operations (AFOs)*, U.S. Env't Prot. Agency, https://www.epa.gov/npdes/animal-feeding-operations-afos [https://perma.cc/2AL2-KB6F] (July 5, 2022), *with* Austen Dip, *Why Are CAFOs Bad for the Environment?*, Action for the Climate Emergency (Aug. 6, 2021), https://acespace.org/2021/08/06/why-are-cafos-bad-for-the-environment/ [https://perma.cc/V6JD-U37K] (detailing the major human health and environmental consequences of allowing CAFOs to continue to operate in the same manner).

massive quantities of livestock waste are being dumped into natural water and airways with no effective means to limit such pollution or hold the polluting actors responsible.[5] As a result, EPA cannot begin to create any solutions because it does not know the exact problem or its extent.[6]

As is, EPA is flying blind, but this does not need to be the case. EPA should use its regulatory authority from the Clean Water Act ("CWA") to create a comprehensive registry of all existing CAFOs with not just information on the type and number of animals held, but also details on all pollutants entering the air and water as a result of the operations. Currently, because the harmful effects of CAFOs on the environment and on marginalized communities are not documented,[7] clear action cannot be taken to remedy the root of the problem itself. Instead, action can only be taken to mitigate the effects until a clear causal link between the pollutants and harmful effects is documented.

Part II of this Note will address CAFOs and the dangers they pose regarding environmental damage in the context of environmental justice. Part III will look at the legal background and context surrounding CAFO regulations. Finally, Part IV will recommend a solution in the form of a public database and an approach to creating this proposed registry. This Note will also address the benefits and drawbacks to this solution, will demonstrate that the benefits ultimately outweigh the drawbacks, and will show that this solution is a step in the right direction in addressing the problem caused by CAFOs.

II. Factual Background

A. *What Is a CAFO?*

Animal Feeding Operations ("AFOs") are facilities for confining and feeding animals for forty-five or more days a year, and where vegetation and crops are not normally sustained.[8] CAFOs are a subcategory of AFOs that do the same thing but on a much larger scale.[9] CAFOs have a much higher density of animals and generally raise the animals for the consumption of their meat, eggs, or milk.[10] An AFO is classified as a CAFO if it contains more than 1,000 animal units confined on-site for over forty-five days.[11] Animal units are defined as animals "equivalent of 1000 pounds live weight," which for the most common livestock animals equates to 1,000 head of beef cattle, 700 dairy cows, 2,500 swine weighing over fifty-five pounds, 125,000 broiler chickens, or 82,000 laying hens or pullets.[12] There are two kinds of CAFOs—the first houses the livestock in buildings that the animals rarely leave, and the second is the feedlot, which keeps the animals in outdoor pens.[13] Each has its own challenges in eliminating waste.[14]

Ultimately, in both kinds of CAFOs, whether indoors or outdoors, the animals are kept cramped and confined, without any ability to graze.[15] For indoor pens, dairy and hog CAFOs often use water to wash the waste and contaminants from buildings into waste storage structures or lagoons.[16] On the other hand, poultry CAFOs use dry waste systems where once the waste falls to the floor from animal cages, it is scraped and collected and moved to a secondary site.[17] For feedlots, the manure accumulates on the ground itself and can wash off into nearby water sources.[18]

B. *CAFOs Cause Pollution Harming Surrounding Environments and Communities*

Currently, there is a clear lack of transparency surrounding CAFOs. The Natural Resources Defense Council ("NRDC") has compiled the data on which states provide information on the CAFOs.[19] As of 2019, two states have no data on CAFOs, thirty-nine have low transparency with EPA, seven states have moderate transparency, and only two states have high transparency regarding their data on CAFOs.[20] A decade of research by NRDC has culminated in the conclusion that EPA lacks even basic information about CAFOs, including their location, number of animals, amount of waste, and waste disposal methods, all of which, in an ideal world, should be information provided to EPA past the initial permit stage to allow for

5. *See generally* U.S. Env't Prot. Agency Off. of Inspector Gen., Eleven Years After Agreement, EPA Has Not Developed Reliable Emission Estimation Methods to Determine Whether Animal Feeding Operations Comply With Clean Air Act and Other Statutes 17-P-0396 (Sept. 19, 2017), https://www.epa.gov/sites/default/files/2017-09/documents/_epaoig_20170919-17-p-0396.pdf [https://perma.cc/B874-QMRT]; U.S. Gov't Accountability Off. (GAO), GAO-08-944, Concentrated Animal Feeding Operations: EPA Needs More Information and a Clearly Defined Strategy to Protect Air and Water Quality From Pollutants of Concern (Sept. 4, 2008), https://www.gao.gov/products/gao-08-944 [https://perma.cc/VRN7-6GPD].
6. *See* D. Lee Miller & Gregory Muren, Nat'l Res. Def. Council, CAFOs: What We Don't Know Is Hurting Us 4 (2019), https://www.nrdc.org/sites/default/files/cafos-dont-know-hurting-us-report.pdf [https://perma.cc/R9AW-B2EH] (noting that a decade ago, GAO concluded that EPA "could not fulfill its regulatory duties under the Clean Water Act without accurate and facility-specific information about CAFOs." Moreover, EPA itself has admitted that it does not have facility-specific information for all CAFOs, despite numerous such facilities across the country mainly concentrated among three or four major companies).
7. *See* Dip, *supra* note 4.
8. Hribar, *supra* note 2, at 1.
9. *Id.*
10. *Id.*
11. Amy Alonzo, *Title 15 Won't Deal With CAFO, Commissioners Say*, Reno Gazette J. (Feb. 16, 2018, 10:48 AM), https://www.rgj.com/story/news/local/mason-valley/2018/02/15/title-15-wont-deal-cafo-commissioners-say/344288002/ [https://perma.cc/FF66-5N8D].
12. *Id.*
13. *Why Are CAFOs Bad?*, *supra* note 3.
14. *Id.*
15. *See id.*
16. *Id.*
17. *Id.*
18. *Id.*
19. Miller & Muren, *supra* note 6, at 14.
20. *Id.* at 14–15. Transparency refers to the amount of information shared with the states and general public, and transparency overall is based on whether the state has low, moderate, or high transparency based on an analysis of six factors: permit status, location, manure storage, type of animal, count of animal, and owner information. *Id.* Even a factor such as type of animal has low transparency with many states, and the most dangerous and relevant factor for pollution purposes—manure storage—is the least transparent factor, with low transparency in almost all states. *Id.*

continued monitoring, assessment, and regulation.[21] Additionally, EPA has withdrawn past proposed rules to collect this information, and to take things a step further in the wrong direction, there have even been lawsuits preventing the federal government from making a comprehensive list of CAFOs in the Midwest.[22] Further, the federal government does not require permits from all CAFOs. In fact, thousands of facilities are not included in the permit databases because the facilities can claim that they pose no risk to water quality, even if they may still have other environmental impacts.[23]

1. Environmental Impact

There are many byproducts and unintended effects of CAFOs. The three main byproducts are odors, noise, and waste.[24] The "waste" generated is large quantities of animal waste that ultimately enters surrounding environments through the water and air.[25] Based on the type of animals and number of animals, manure alone can be between 2,800 and 1.6 million tons per year, with some large farms producing more waste than U.S. cities.[26] The resulting manure is the most pressing public health issue caused by CAFOs.[27] There are methods of using or storing manure, but given the large quantities and frequent production, there are risks such as the nutrients and chemicals from the manure oversaturating the surrounding soil and entering the groundwater.[28] Moreover, improper storage of manure and waste poses risks because contaminants can enter the air and water through leakage or from spills during weather events.[29] While manure has long been used as fertilizer, the saturated quantity of animal waste emitted from these facilities is going into surrounding areas at random, not being properly stored and applied as fertilizer to growing areas.[30] Beyond just the oversaturated nutrients, animal waste can contain parasites, viruses, and high quantities of bacteria.[31] To make matters worse, antibiotics are regularly added to livestock feed to increase rates of growth for the animals, which in turn increases antibiotic resistance among microbial populations and potentially increases resistance of naturally occurring pathogens in surface waters contaminated by the waste.[32]

Ultimately, what gets into the water harms ecology and wildlife, including various surrounding species.[33] Beyond immediate ecological concern, the livestock industry is a major contributor to climate change—the most damaging greenhouse gasses are methane and nitrous oxide, which result from the storage of manure, the main form of animal waste from AFOs.[34]

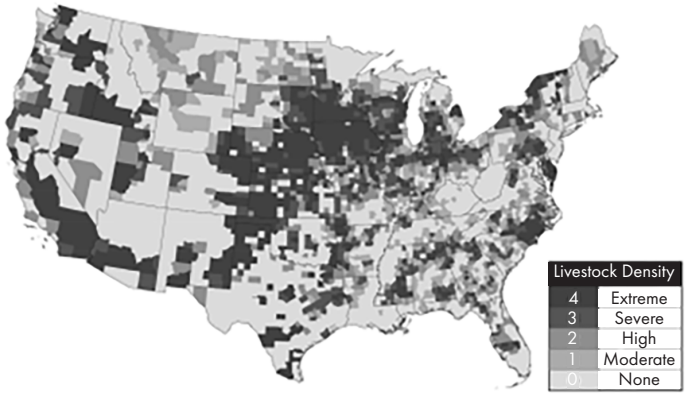
2. Environmental Injustice

Beyond the purely environmental impacts of the animal waste, CAFOs also contribute to environmental injustice in surrounding communities due to the disproportionate impact of the pollution in immediate areas.[35] For example,

21. *Id.* at 4.
22. *See* National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65431 (proposed Oct. 21, 2011) (proposed rule would have solicited basic identifying information about all CAFOs or at least CAFOs in areas with water quality concerns); Withdrawal of National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 77 Fed. Reg. 42679 (withdrawn on July 20, 2012); Madison McVan, *Information on Factory Farms Is Spotty at Best. The Government Has Been Hogtied From Doing More*, Midwest Ctr. for Investigative Reporting (Feb. 25, 2021), https://investigatemidwest.org/2021/02/25/information-on-factory-farms-is-spotty-at-best-the-government-has-been-hogtied-from-doing-more/ [https://perma.cc/D5P4-XWCC].
23. Georgina Gustin, *Groups Seek End to Factory Farm Pollution Loopholes Dating Back to 1970s*, Inside Climate News (Mar. 9, 2017), https://insideclimatenews.org/news/09032017/cafo-epa-regulations-scott-pruitt-concentrated-animal-feeding-operations/ [https://perma.cc/YF75-76UW] (detailing the dangers of the outdated "agricultural stormwater exemption" for pollution from spillovers occurring during storm events); Brigit Rollins, *Enviro Groups Ask EPA to Revisit CWA CAFO Rules*, The Nat'l Agric. L. Ctr. (Oct. 27, 2022), https://nationalaglawcenter.org/enviro-groups-ask-epa-to-revisit-cwa-cafo-rules/#:~:text=The%20petition%20asks%20EPA%20to,Act%20(%E2%80%9CCWA%E2%80%9D).&text=According%20to%20the%20text%20of,the%20Nation's%20waters.%E2%80%9D%2033%20U.S.C. [https://perma.cc/TSH5-VVRH] (describing the dangers of the "agricultural stormwater exemption" and how CAFOs, while still ultimately polluting water, can avoid NPDES permits).
24. *See Environmental Hazards: Concentrated Animal Feeding Operations (CAFOs) and Public Health*, Wis. Dep't of Health Servs., https://www.dhs.wisconsin.gov/environmental/cafo.htm [https://perma.cc/6QS3-WU8G] (Aug. 12, 2022) (describing problems from mismanaged and unmonitored CAFOs as being "changes in air quality; increased odor and noise complaints; changes in land use; groundwater and surface water quality changes; damage to local roads from increased heavy truck traffic; and impacts on quantity and quality of nearby drinking water wells") [hereinafter *Environmental Hazards*].
25. Hribar, *supra* note 2, at 4 (noting that CAFOs, as part of the agriculture sector, are a leading contributor of pollutants to lakes, rivers, and reservoirs, with states with high concentrations of CAFOs experiencing twenty to thirty annual serious water quality problems solely as a result of manure mismanagement).
26. *Id.* at 2.
27. Hribar, *supra* note 2, at 2.
28. *Id.* at 3.
29. *See* JoAnn Burkholder et al., *Impacts of Waste From Concentrated Animal Feeding Operations on Water Quality*, 115 Env't Health Persp. 308, 308 (2007) (detailing the specific contaminants released in the animal waste and their effect on contamination of surrounding waters).
30. *See* Hribar, *supra* note 2, at 2–3.
31. *See id.* at 309 (using examples of contaminants from specific livestock, such as swine, to describe the presence of contaminants from livestock waste in groundwater supplies and surface water).
32. *Id.*
33. *Id.* (detailing how bacteria and toxins have impacted the water, resulting in the death of freshwater fish of varying species, and how pollutants have created toxic and noxious algae blooms); U.S. Env't Prot. Agency, Environmental Assessment of Proposed Revisions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations xi (2001), https://www3.epa.gov/npdes/pubs/cafo_proposed_env_assess_ch1-3.pdf [https://perma.cc/FZ2P-GPHK] (showing that in 2001, EPA recognized dangers of animal waste to wildlife and humans, citing examples of bacteria in waste causing avian botulism, cholera killing migratory waterfowl, and how shellfish concentrate harmful microorganisms from the waste in their tissues, ultimately transmitting them to predators).
34. Giampiero Grossi et al., *Livestock and Climate Change: Impact of Livestock on Climate and Mitigation Strategies*, 9 Animal Frontiers 69, 69–70 (Jan. 2019). Manure acts as an emission source for greenhouse gases, and when it is stored in anaerobic environments, such as in liquid slurry form in lagoons or tanks in many animal operation facilities, it only increases its methane production. *See id.* Extended storage and warmer conditions further increase the emissions. *See id.*; Hribar, *supra* note 2, at 7 (finding global livestock operations are responsible for eighteen percent of greenhouse production and over seven percent of greenhouse gas emissions in the United States, with EPA deeming manure management the fourth leading source of nitrous oxide emissions and the fifth leading source of methane emissions).
35. *Injustice in Our Industrial Food System: CAFOs and Racial Inequity*, Mo. Coal. for the Env't (June 10, 2020), https://moenvironment.org/injusticecafos/ [https://perma.cc/N5JH-3HYJ].

as of 2019, all of Missouri's most "CAFO-dense counties" had higher rates of poverty than the state average.[36] The figure below (Map 1.1) shows livestock farms across the country and provides a clear visualization of where the densest farms are located.[37] The following figure (Map 1.2) shows poverty rates around the country by county—when comparing the two maps, there are regions where there is clear alignment between CAFO-dense regions and high poverty levels.[38]

Map 1.1: Livestock on U.S. Factory Farms[a]



Map 1.2: Poverty Rates in the Country[b]

[a] *Factory Farm Nation: 2020 Edition*, *infra* note 37.

[b] *Maps & Data—United States 2019*, *infra* note 38.

The existence of CAFOs results in a clear diminishment of property values, and it becomes doubly difficult for people to leave these regions that are already unfairly socioeconomically impacted.[39] For farmers in the areas who rely on their property values, they are also doubly hurt by potentially losing business to large-scale operations while dealing with the diminished value of their property.[40]

Beyond just economic inequality, the economic injustice caused by CAFOs also results in economic racism, which can be defined as "the disproportionate impact of environmental hazards on people of color."[41] Although in Missouri the population in these "CAFO-dense" counties is over eighty-five percent white, the same cannot be said for other communities facing the consequences of CAFOs.[42] In states like North Carolina, which is known for large-scale industrial hog farming, CAFOs are seven times more common in high poverty areas and five times more likely in communities that are majority non-white.[43] Hog CAFOs in North Carolina are built in the same communities that once housed slave plantations, meaning Black residents in the area continue to face injustice in the form of "high rates of poverty, poor health care, low educational attainment, unemployment and substandard housing."[44] In North Carolina, the fecal matter from pig farms is disposed of by being sprayed from the lagoons into the surrounding air, causing health issues for those breathing in that air.[45] Because Black, Brown, and Indigenous residents are more likely to live under three miles from the pig farms, they are almost twice as likely to experience the resulting health issues.[46] These health conditions and environmental injustices are not new—people have faced these harmful effects for years, and the relationship between CAFOs and injustice has been recognized and continues to be documented, yet inaction remains.[47]

36. *Id.*
37. *Factory Farm Nation: 2020 Edition*, Food & Water Watch (Apr. 2020), https://foodandwaterwatch.org/wp-content/uploads/2021/03/ib_2004_updfacfarmmaps-web2.pdf [https://perma.cc/P62T-PKLE].
38. *Maps & Data—United States 2019*, Poverty USA, https://www.povertyusa.org/data [https://perma.cc/99NZ-WJB8] (last visited Dec. 2, 2022).
39. Kally Leidig, *The Effect of CAFOs on Neighboring House and Land Values*, Midwest Env't Advocs. (2020), https://midwestadvocates.org/the-effect-of-cafos-on-neighboring-house-and-land-values [https://perma.cc/CF2M-R845] ("Properties located within three miles of a CAFO lose up to 26% of their value" while "neighboring houses, those within .25 miles lose up to 88%," which ultimately hurts rural farmers) (citing John A. Kilpatrick, *Animal Operations and Residential Property Values*, The Appraisal J. (2015)).
40. *Id.* (noting that farmers rely on the value of their properties because they often tend to be "income poor but asset rich, meaning most of their money is tied up in property").
41. *Injustice in Our Industrial Food System: CAFOs and Racial Inequity*, *supra* note 35; *Environmental Justice/Environmental Racism*, Energy Just. Network, https://www.ejnet.org/ej/ [https://perma.cc/44QG-2XZP] (last visited Dec. 2, 2022).
42. *Injustice in Our Industrial Food System: CAFOs and Racial Inequity*, *supra* note 35 (citing *QuickFacts Barry County, Missouri; Sullivan County, Missouri; Missouri*, U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/barrycountymissouri,sullivancountymissouri,MO/PST045219 [https://perma.cc/A3AR-85W5] (last visited Nov. 12, 2022).
43. *Id.* (citing Steve Wing et al., *Environmental Injustice in North Carolina's Hog Industry*, 108 Env't Health Persp. 225, 225 (Mar. 2000) (describing the environmental injustices created by North Carolina's hog industry on poor and non-white communities).
44. Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*, 121 Env't Health Persp. 182, 183 (2013).
45. *Environmental Racism*, Food Is Power, https://foodispower.org/environmental-and-global/environmental-racism/ [https://perma.cc/G8KX-XLFC] (Jan. 2022) (noting that health complications include respiratory ailments from hydrogen sulfide, stress, anxiety, mucous membrane irritation, respiratory conditions, reduced lung function, acute blood pressure elevation, and blue baby syndrome, which is a condition in which a baby's skin can turn blue due to insufficient oxygen in the blood).
46. *Id.*
47. *See* Robert Alvarez, *Environmental Racism and the Pork Industry: The Vindication of Epidemiologist Steve Wing*, CounterPunch (June 2, 2021), https://www.counterpunch.org/2021/06/02/environmental-racism-and-the-pork-industry-the-vindication-of-epidemiologist-steve-wing/ [https://perma.cc/G5UV-XW9F] (noting that University of North Carolina epidemiologist Steve Wing was one of the first to provide evidence of the disproportionate impacts on poor people of color caused by industrial hog operations in 1996, and was vindicated by a 2021 study by the National Academy of Sciences with the first comprehensive assessment of deaths from airborne agricultural pollutants that ultimately concluded that improving livestock

III. Legal Background

A. *Regulatory Authority From the CWA and the NPDES*

Currently, CAFOs are regulated by EPA's NPDES permitting system under the CWA.[48] The general national goal of the CWA is the elimination of discharge of pollutants into the navigable waters of the United States, and one such path to the elimination of pollutants comes from the control of point sources.[49] A point source is defined as:

> [A]ny discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.[50]

Navigable waters are more loosely defined as "waters of the United States, including the territorial seas."[51] Waters of the United States, however, include both navigable waters as well as "tributaries to navigable water, interstate waters, the oceans out to 200 miles, and intrastate waters which are used: by interstate travelers for recreation or other purposes, as a source of fish or shellfish sold in interstate commerce, or for industrial purposes by industries engaged in interstate commerce."[52] Finally, toxic pollutants are defined as:

> [T]hose pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.[53]

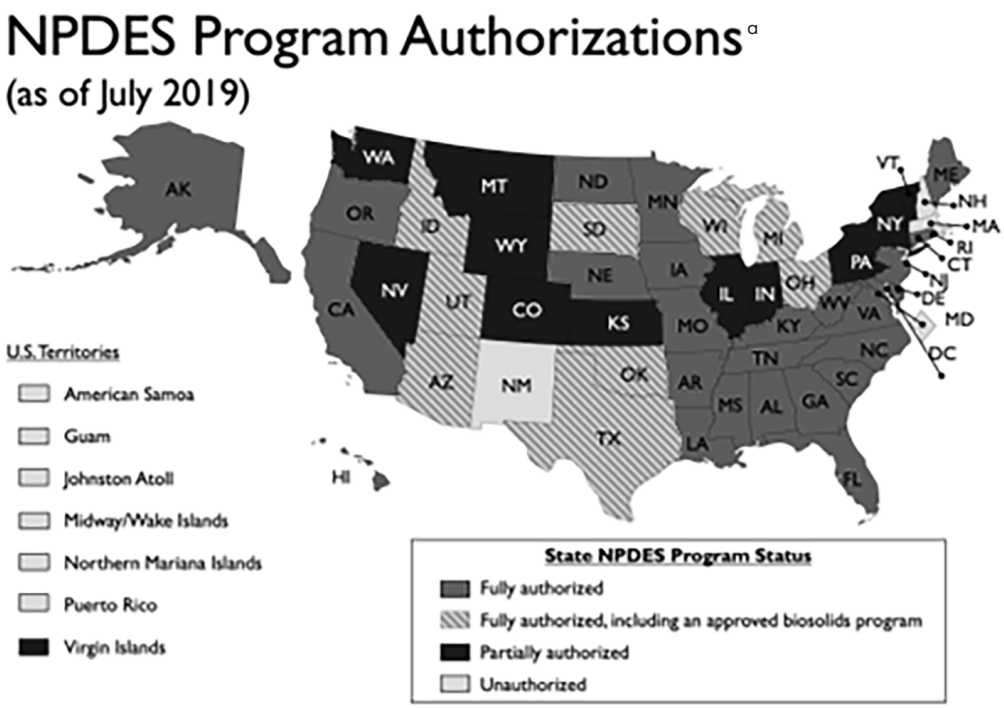
Currently, per the CWA, pollution is not entirely banned but is instead permitted so long as those discharging pollutants do so with an NPDES permit.[54] A pollutant under the CWA means "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water."[55] The NPDES permit has four main sets of requirements: (1) effluent limitations; (2) special conditions; (3) standard conditions; and (4) monitoring, recordkeeping, and reporting requirements.[56] Seeing as the permit program works through the CWA, the permits are designed to protect water and work by specifying acceptable levels of pollutants in a discharge, and the holder of the permit is then entitled to choose which technologies to use to best achieve that level of compliance.[57]

However, in certain cases, permits may contain "best management practices" for achieving those permissible levels of pollutants.[58] Although the CWA and the NPDES permitting system are monitored through federal agency oversight, states can receive EPA approval to issue their own NPDES permits, or, if the state does not have approval, the state can receive permits from EPA regions.[59] States are not required to use the same application forms as EPA when they issue NPDES permits, but they are still required to meet the minimum federal requirements, which in effect creates a federal minimum standard for NPDES permits.[60] Maryland is a good example of this, as it has had NPDES permitting authority since 1974 and issues permits for both individual dischargers and multiple dischargers that have similar operations and types of discharges.[61]

Seeing as there are different types of point sources and facilities that demand NPDES permits, EPA has created a specific NPDES writers' manual for CAFOs with clear requirements, an explanation of the permit process, and information about nutrient management planning.[62] Nutrient management planning is used to develop appropriate rates of application for manure and fertilizer.[63] Though

waste management can directly result in reduced air pollution, which is the largest environmental risk factor for mortality in the United States) (referencing Nina G.G. Domingo et al., *Air Quality-Related Health Damages of Food*, 118 Proc. Nat'l Acad. Scis. U.S. Am. (2021)).

48. *Why Are CAFOs Bad?*, *supra* note 3.
49. 33 U.S.C. § 1251 (1987).
50. 33 U.S.C. § 1362(14) (2019).
51. 33 U.S.C. § 1362(7) (2019).
52. *Definitions—N*, U.S. Nat'l Park Serv., https://www.nps.gov/dscw/definitionsdc_n.htm [https://perma.cc/988L-CXE2]; *NPDES Permit Basics*, U.S. Env't Prot. Agency, https://www.epa.gov/npdes/npdes-permit-basics [https://perma.cc/XT9A-CTQ7] (Sept. 28, 2021).
53. 33 U.S.C. § 1362(13) (2019).
54. *NPDES Permit Basics*, *supra* note 52.
55. 33 U.S.C. § 1362(6) (2019); *see generally* Cnty. of Maui v. Haw. Wildlife Fund, 140 S. Ct. 1462 (2020) (holding permits are required "when there is a discharge from a point source directly into navigable waters or when there is the *functional equivalent of a direct discharge*." into navigable waters). The Court also noted that the relevant factors in determining whether a particular discharge is a "functional equivalent" of a discharge include the time and distance between a discharge and the point source, the "nature of the material through which the pollutant travels," and the "extent to which the pollutant is diluted or chemically changed as it travels," among others. *Id.*
56. U.S. Env't Prot. Agency, *Producers' Compliance Guide for CAFOs: Revised Clean Water Act Regulations for Concentrated Animal Feeding Operations (CAFOs)*, Nov. 2003, at 27, https://www.epa.gov/system/files/documents/2021-08/compliance-cafos.pdf [https://perma.cc/L82M-P5GU].
57. *NPDES Permit Basics*, *supra* note 52.
58. *Id.*
59. *Id.*
60. *Id.*; *Regional and Geographic Offices*, U.S. Env't Prot. Agency, https://www.epa.gov/aboutepa/regional-and-geographic-offices [https://perma.cc/6NAL-86QN] (Feb. 7, 2022). EPA has ten regions throughout the country—each serving multiple states/territories—and each regional office is responsible for executing programs within those states and territories for the region. *See id.*
61. Brigit Rollins, *Clearing the Air: Maryland Court Finds State Must Regulate Gaseous Ammonia Under CWA*, The Nat'l Agric. L. Ctr. (Mar. 18, 2021), https://nationalaglawcenter.org/clearing-the-air-maryland-court-finds-state-must-regulate-gaseous-ammonia-under-cwa/ [https://perma.cc/8SXH-MKDJ].
62. *See generally NPDES Permit Writers' Manual for Concentrated Animal Feeding Operations*, U.S. Env't Prot. Agency, https://www.epa.gov/npdes/npdes-permit-writers-manual-concentrated-animal-feeding-operations [https://perma.cc/5NTK-AQVG] (Nov. 22, 2022).
63. *NPDES Permit Writers' Manual for Concentrated Animal Feeding Operations: 5. Nutrient Management Planning*, U.S. Env't Prot. Agency, https://www.



[a] *NPDES Program Authorizations*, U.S. Env't Prot. Agency, https://www.epa.gov/npdes/npdes-program-authorizations [https://perma.cc/TN6K-TTSJ] (Apr. 8, 2022).

manure can be used as a fertilizer, not all the manure produced by CAFOs can be used as fertilizer given that CAFOs are primarily for livestock, and there is no actual growing happening in the surrounding area that would benefit from added manure in the soil.[64] However, nutrient management plans ("NMPs") can also include best practices for maximizing productivity while conserving nutrients and the environment, such as methods of handling and storing the waste, managing diets for the livestock, and irrigating.[65]

Beyond the four main sets of requirements in an NPDES permit, there are nine minimum requirements for nutrient management:

> (1) ensuring adequate storage of manure, including procedures to ensure proper O&M [operation and maintenance] of the storage facility; (2) managing mortalities to ensure that they are not disposed of in a liquid manure, stormwater, or process wastewater storage or treatment system that is not specifically designed to treat animal mortalities; (3) ensuring that clean water is diverted, as appropriate, from the production area; (4) preventing direct contact of confined animals with waters of the U.S.; (5) ensuring that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or stormwater storage or treatment system unless specifically designed to treat such chemicals and other contaminants; (6) identifying appropriate site-specific conservation practices to be implemented, including as appropriate buffers or equivalent practices, that control runoff of pollutants to waters of the U.S.; (7) identifying protocols for appropriate testing of manure, litter, process wastewater, and soil; (8) establishing protocols to land apply manure, litter, or process wastewater in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater; (9) identifying specific records that will be maintained to document the implementation and management of the minimum elements described above.[66]

NPDES Permit Writers' Manual for CAFOs also outlines the permit guidelines for the NPDES' general requirements, with the main elements of the permit itself being a cover page, effluent limitations, monitoring and reporting requirements, recordkeeping requirements, special conditions, and standard conditions.[67] The monitoring requirements, described in section 4.2 of the guide, require "daily and weekly visual inspection" for the production areas as well as manure and soil analysis and monitoring for non-routine activities, such as any overflow or discharge caused by catastrophic weather events.[68] It is important to note that the monitoring requirements for medium and small CAFOs are established on a case-by-case basis.[69] Under these guidelines, a sample permit would show plans for

epa.gov/sites/default/files/2015-08/documents/cafo_permitmanual_chapter5.pdf [https://perma.cc/3RWK-3TDA] (Nov. 22, 2022) [hereinafter *NPDES Nutrient Management Planning*].

64. *NPDES Nutrient Management Planning*, *supra* note 63.
65. *Id.*
66. *Id.* at 5-2.
67. *NPDES Permit Writers' Manual for Concentrated Animal Feeding Operations: 5. Elements of an NPDES Permit for a CAFO*, U.S. Env't Prot. Agency, at 4-1 https://www.epa.gov/sites/default/files/2015-08/documents/cafo_permitmanual_chapter4.pdf [https://perma.cc/D3BP-HC3R] (Nov. 22, 2022).
68. *Id.* at 4-37.
69. *Id.*

monitoring discharges and overflows as well as self-monitoring plans.[70]

B. EPA Enforcement Authority

Though EPA is flying blind, it has the data collection power to keep itself and the public informed despite being under-utilized.[71] Section 308 of the CWA provides authority for EPA to collect data on point sources, which includes CAFOs, to ensure that the effluent limitations are being upheld.[72] Specifically, the section provides that:

> [W]henever required to carry out the objective of this chapter, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this chapter; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section, the Administrator and the EPA can require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require.[73]

EPA has both criminal and civil enforcement methods which differ in legal standard, burden of proof, and results.[74] Regarding the legal standard, stricter civil liability arises through the existence of the environmental violation alone.[75] There is no consideration whether the responsible party knew about the law or regulation that was violated.[76]

On the other hand, criminal liability is triggered by an intent to violate.[77] Given this distinction, the majority of environmental crimes investigated by EPA are "knowing violations," which are classified as felonies unless they involve toxic substances or pesticide statutes.[78] For burden of proof, just like with regular civil and criminal trials, civil liability is determined by "the preponderance of the evidence," while criminal guilt relies on belief "beyond a reasonable doubt."[79] Finally, for results, criminal and civil prosecution are differentiated by the possibility of imprisonment for a criminal violation, which goes beyond monetary penalties or injunctive relief for a civil violation.[80] In enforcing the law, EPA has recently pursued both criminal and civil penalties with equal regularity.[81]

Cleanup enforcement works by finding the parties who caused the contamination and then choosing to either have them perform the cleanup or have them pay for another party or EPA to perform the cleanup.[82] The cleanup action by EPA can either be an administrative action in the form of an order to clean up or a judicial action in the form of a court filing, which occurs after a party has failed to comply with a regulation, statute, or administrative order or fails to pay for the cleanup as ordered.[83] Ultimately beyond settlements and general criminal or civil penalties, EPA can include Supplemental Environmental Projects ("SEPs") and mitigation as part of enforcement settlements.[84] SEPs go beyond just fixing the previously created problem by having the violator or responsible party work on a project that provides "tangible environmental or public health benefits to the affected community or environment" that is still related to the violation but goes beyond the mandated laws.[85] EPA incentivizes violators to undertake an SEP by offering reduced penalties.[86] EPA has also created a database on settlements and compliance history—Enforcement and Compliance History Online—which allows users to search for facilities to check compliance as well as look at cases and settlement results to see cases that have resulted in SEPs and what the projects were.[87]

C. Past Attempts at Regulation

There have been proposals in the past to change the rules regarding CAFOs, and the resulting pollution showing the clear need for reform and further regulation.[88] For example, in 2011, EPA proposed a rule to collect certain information about CAFOs under the "National Pollutant Discharge System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule," which set up two

70. Mich. Dep't Env't Quality, National Pollutant Discharge Elimination System Wastewater Discharge General Permit: Concentrated Animal Feeding Operations Permit No. MIG010000 5, 26 (2015), https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/CAFO/MIG010000-General-Permit-2025.pdf?rev=797a411674d345eb93925c86b73a7fec [https://perma.cc/3DJU-RVFF].
71. 33 U.S.C. § 1318(b).
72. 33 U.S.C. § 1318(a)(B).
73. 33 U.S.C. § 1318(a)(A).
74. *Basic Information on Enforcement*, U.S. Env't Prot. Agency, https://www.epa.gov/enforcement/basic-information-enforcement [https://perma.cc/9SDK-9RMJ] (Nov. 2, 2022).
75. *Id.*
76. *Id.*
77. *Id.*
78. *Id.*
79. *Burden of Proof*, Cornell L. Sch. Legal Info. Inst., https://www.law.cornell.edu/wex/burden_of_proof [https://perma.cc/L95W-49WM] (last visited Nov. 12, 2022); *Basic Information on Enforcement*, *supra* note 74.
80. *Basic Information on Enforcement*, *supra* note 74.
81. *Enforcement Annual Results for Fiscal Year 2021*, U.S. Env't Prot. Agency, https://www.epa.gov/enforcement/enforcement-annual-results-fiscal-year-2021#civil%20enforcement [https://perma.cc/C834-LS3R] (Sept. 29, 2022). In 2021, for example, EPA's criminal enforcement program opened 123 new cases, with an individual defendant prosecuted in 88% of the cases with a 96% conviction rate. *Id.* In the same year, EPA concluded 114 civil judicial actions, which is the highest in the past four years. *Id.*
82. *Basic Information on Enforcement*, *supra* note 74.
83. *Id.*
84. *Id.*
85. *Supplemental Environmental Projects (SEPs)*, U.S. Env't Prot. Agency, https://www.epa.gov/enforcement/supplemental-environmental-projects-seps [https://perma.cc/9KUV-Q6MX] (Nov. 9, 2022).
86. *Id.*
87. *Id.*; *ECHO Enforcement and Compliance History Online*, U.S. Env't Prot. Agency, https://echo.epa.gov [https://perma.cc/W7XP-7H2U] (last visited Nov. 12, 2022).
88. Concentrated Animal Feeding Operations: EPA Needs More Information, *supra* note 5, at 16.

potential options for collecting information on CAFOs.[89] The first option "would use the authority under CWA section 308 to obtain basic identifying information from all CAFOs," while the second option also used CWA section 308 authority to obtain the same identifying information from CAFOs that fall within areas that have been identified as having "water quality concerns."[90]

In 2018, legislation known as the "Agriculture Creates Real Employment Act" or the "ACRE Act" was introduced in the U.S. Senate.[91] Though the Act ultimately did not become law, it was a clear display of support for CAFOs in the U.S. Congress, as it showed that some members of Congress were in support of giving CAFOs more freedom in their ability to pollute.[92] The ACRE Act, in combination with the 2018 Fair Agricultural Reporting Method ("FARM") Act, would have created agricultural toxic emissions regulations from the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), which addresses the health harms to humans caused by releases of hazardous substances.[93] Similarly, the FARM Act was similar in its unabashed support for CAFOs.[94] The FARM Act, if it became law, would amend section 103(e) of CERCLA to exempt "air emissions from animal waste (including decomposing animal waste) at a farm" from reporting to the National Response Center, regardless of the amount of hazardous substances released.[95] Additionally, it would go on to define "animal waste" to mean "feces, urine, or other excrement, digestive emission, urea, or similar substances emitted by animals (including any form of livestock, poultry, or fish)," and to also include "animal waste that is mixed or commingled with bedding, compost, soil, or any other material typically found with such waste."[96]

D. Relevant Case Law

Although states must all meet the federal EPA minimum standards when issuing permits under the NPDES permit rules, individual states and regions have had different approaches toward CAFOs and regulating waste.[97] This is a problem because it allows for different levels of stringency and a lack of uniform regulation, even though the effects are not necessarily localized since pollutants enter the water and air. In the past year, disagreements taken to court have shown potential progress toward increased regulation with certain courts in favor of it.[98]

However, although people cannot rely on courts alone to enact the change they wish to see, court decisions can help inform a framework for the new regulation. Most recently, in *Food & Water Watch v. United States EPA*, the U.S. Court of Appeals for the Ninth Circuit ruled in favor of regulating the discharge from CAFOs in response to Idaho's permit that did not ensure sufficient monitoring to comply with "zero discharge" requirements.[99] The permit in Idaho forbade "underground discharges from production areas and dry weather discharges from land-application areas" but contained no monitoring requirements for either form of discharge.[100] The lack of a monitoring requirement prevents ensuring compliance with the effluent limitations, making EPA's issuance of the Idaho permit "arbitrary, capricious, and a violation of law," leading the Ninth Circuit to vacate the permit.[101] This case showed clear progress for environmentalists because a district court outright held that simply forbidding discharge was not a sufficient means of achieving goals—there had to be some sort of monitoring provision to ensure that the no-discharge standard was actually met.[102]

Circling back to the aforementioned poultry operations in Maryland polluting the Chesapeake Bay, a Montgomery County Circuit Court Judge ruled in March 2021 that the Maryland Department of Environment must regulate nitrogen released into the air because it inevitably goes into the waters protected by the CWA.[103] The nitrogen, once

89. National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65431, 65431 (proposed Oct. 21, 2011).
90. *See id.*; 33 U.S.C. § 1318(a)(A) (providing the Administrator with the authority to require records and reports from owners of point sources to ensure compliance with established standards and limits).
91. Agriculture Creates Real Employment Act (ACRE Act), S. 2663, 115th Cong. (2018).
92. Larissa Liebmann, *Don't Let CAFOs Hide Their Pollution|Dive Into Democracy*, Waterkeeper All. (Apr. 23, 2018), https://waterkeeper.org/news/dont-let-cafos-hide-their-pollution-dive-into-democracy/ [https://perma.cc/E9RN-FFWP]; *Hearing to Examine S.2663, The Agriculture Creates Real Employment (ACRE) Act Before the Committee on Environment and Public Works*, 115th Cong. (2018) (statement and answers to questions on the record of Doug Miyamoto, Director of the Wyoming Department of Agriculture, explaining his belief that there is no risk of hydrogen sulfide and ammonia emissions from large animal operations and citing that belief as the reason why the Wyoming Department of Agriculture does not have reports of community concerns on public health relating to livestock operations).
93. *See* Laurie Ristino, *Congress Just Gave Big Agriculture the Pollution Green Light*, The Hill (Mar. 23, 2018, 2:20 PM), https://thehill.com/opinion/energy-environment/379971-congress-just-gave-big-agriculture-the-pollution-green-light [https://perma.cc/XQ7G-E5DX].
94. *See* Fair Agricultural Reporting Method Act (FARM Act), S. 2421, 115th Cong. (2018).
95. *Id.*
96. *Id.*
97. *NPDES Permit Basics*, *supra* note 52.
98. *See* Food & Water Watch v. U.S. Env't Prot. Agency, 13 F.4th 896, 897 (9th Cir. 2021), *opinion withdrawn and superseded on reh'g*, 20 F.4th 506 (9th Cir. 2021).
99. *See generally id.* (holding that EPA's issuance of a general NPDES permit under the CWA for Idaho CAFOs was arbitrary and capricious because it lacked sufficient provisions to monitor compliance with discharge limitations and because, while the original permit forbade underground discharge from production areas and dry weather discharges from land-application areas, the permit had no requirements to monitor whether there was any kind of discharge).
100. *Id.* at 907.
101. *Id.*
102. Final Reissuance of NPDES General Permit for Concentrated Animal Feeding Operations in Idaho (IDG010000), 85 Fed. Reg. 28624 (May 13, 2020) (creating a permit effective from June 15, 2020, to June 14, 2025, for animal feeding operations subject to 40 C.F.R. § 412, which lists the requirement for new sources as "[t]here must be no discharge of process wastewater pollutants into U.S waters," but the permit itself makes no mention of monitoring discharge or any means of ensuring that there is in fact no discharge from new sources); 40 C.F.R. § 412.
103. *In re Assateague Coastal Trust for Judicial Review of the Decision of: the Md. Dep't of the Env't in re Land & Materials Admin. Determination*, No. 482915-V, 2021 Md. Cir. Ct. LEXIS *4, *4–5 (Mar. 2021); Christine Condon, *Maryland Appeals Ruling Forcing Regulation of Gaseous Ammonia Emis-*

in the Chesapeake Bay water, then overstimulates algae growth and causes other dire consequences for aquatic life, in addition to the health hazards already created for humans by the ammonia in the air.[104] Environmental advocates hope to take the court's ruling as a sign that the state will start requiring CAFOs to try mitigating activities such as poultry litter or planting vegetation in nearby areas preventing the gas from going into waterways.[105] While all of these possible solutions are already considered mandatory "best practices" under the state's current statutory structure and facilities are already required to list generally what best practices are used, there are no specific required actions or "best practices" to specifically reduce the ammonia emanating into the air.[106] Washington State has another such example of potential progress toward increased regulation, where CAFO permits were returned to the agency after a court ruled that the Pollution Control Hearing Board erred in approving the CAFO permits "as written," in part due to insufficient monitoring.[107]

Most recently, in October 2022, environmental groups filed suit in the Ninth Circuit against EPA for failing to respond to a 2017 petition asking for stricter clean water rules governing factory farms.[108] The basis for the suit is that EPA's failure to respond to the original 2017 petition thus far is "arbitrary, capricious, and contrary to the Administrative Procedure Act," which requires federal agencies to conclude matters "within a reasonable time."[109] In the time EPA has not responded, the industry has grown by forty percent, the overall number of CAFOs nationally has grown, and the percentages of CAFOs that have NPDES permits have actually gone down.[110] The plaintiffs' new October 2022 petition addresses EPA's own admissions that current rules and regulations are not sufficient and allow for loopholes and increased pollution.[111] Finally addressing EPA's refusal to update CAFO regulations without court intervention and the lack of response to the 2017 petition, plaintiffs have called for the court to grant a writ of mandamus compelling EPA to answer the petition within ninety days.[112] The case was ultimately referred to the Circuit Mediator with a stay of proceedings until January 9, 2023.[113]

E. Pushback to Progress

Despite cases showing progress toward increased CAFO regulation and restriction, there is still clear pushback across the country.[114] Beyond inaction at the federal level like the failed ACRE Act and FARM Act, there is also significant pushback to regulating CAFOs at the state and

sions From Poultry Farms, The Balt. Sun (Apr. 13, 2021, 5:34 PM), https://www.baltimoresun.com/news/environment/bs-md-mde-appeal-gaseous-ammonia-poultry-farms-20210413-5nq2syqqajcd3h7n5xae5jv6pa-story.html [https://perma.cc/33XN-5PQL].

104. Condon, *supra* note 103.

105. *Id.*

106. *Id.* Christine Condon goes on to detail that "[d]uring the proceedings, the state argued that extending the water pollution permit process to include gaseous ammonia would set a confusing precedent by including an airborne pollutant in water regulations, but the court found that Maryland law, an expansion of the federal CWA, requires MDE to control "'any liquid, gaseous, solid, or other substance that will pollute any waters of the state'—including ammonia." *Id. See also* Md. Code Ann., Env't § 9-329.2 (LexisNexis) (stating under the section for discharge of chlorine into Chesapeake Bay or any of its tributaries "(b) Determination of allowable concentrations.—To determine the allowable concentrations of chlorine or chlorine products under this section, the Secretary of the Environment, in consultation with the Secretary of Natural Resources, shall adopt regulations that: (1) Use the best practicable management technologies; and (2) set forth approved monitoring technologies").

107. Wash. State Dairy Fed'n v. Dep't of Ecology, 18 Wash. App. 2d 259, 319 (2021). The court held that the Pollution Control Hearing Board erred for the following reasons:

> First, although the permit conditions satisfy AKART ['all known, available, reasonable methods of prevention, control and treatment'] requirements for animal pens and corrals, they do not meet this standard for existing manure lagoons or composting areas. Second, while the effluent limitations in the form of best management practices prevent violations of surface water quality standards for tile drains in the state only permit. In addition, the permits do not provide adequate protection of groundwater quality for composting areas and existing manure lagoons. Third, soil sampling and visual inspections are insufficient monitoring methods to ensure compliance with the permits. Fourth, the combined permit fails to provide for public participation in development of the site-specific portions of the nutrient management plan as required under the CWA. Fifth, Ecology was required to consider climate change in drafting its permits to the extent that it could not contradict its own standards promulgated pursuant to the CWA and WPCA. Finally, the T-SUM 200 standard for field application satisfies AKART requirements as applied to Eastern Washington.

Id. at 314.

108. *After Long Delay, Groups Sue EPA for Response on Factory Farm Water Pollution Rules*, Food & Water Watch (Oct. 11, 2022), https://www.foodandwaterwatch.org/2022/10/11/after-long-delay-groups-sue-epa-for-response-on-factory-farm-water-pollution-rules/ [https://perma.cc/8LU6-TXPC]; *Dozens of Advocacy Groups Challenge EPA on Factory Farm Pollution*, Food & Water Watch (Mar. 8, 2017), https://www.foodandwaterwatch.org/2017/03/08/dozens-of-advocacy-groups-challenge-epa-on-factory-farm-pollution/ [https://perma.cc/9V58-QF5X].

109. Petition for a Writ of Mandamus to Compel Unreasonably Delayed Action by the Environmental Protection Agency at 2–3, Food & Water Watch, Inc. et al. v. U.S. Env't Prot. Agency (9th Cir. Oct. 7, 2022), https://environmentalintegrity.org/wp-content/uploads/2022/10/2022.10.7-Petition-for-Writ-of-Mandamus.pdf [https://perma.cc/L7JQ-YDEX] [hereinafter Petition for a Writ of Mandamus]; 5 U.S.C. § 555(b).

110. Petition for a Writ of Mandamus, *supra* note 109, at 6; *NPDES CAFO Permitting Status Report: National Summary, Endyear 2021*, U.S. Env't Prot. Agency (July 20, 2022), https://www.epa.gov/system/files/documents/2022-07/CAFO%20Status%20Report%202021.pdf[https://perma.cc/29NC-7K5L] (showing that there was a national total of 21,237 CAFOs, and of those, 6,266 had NPDES permits); *NPDES CAFO Permitting Status Report—National Summary, Endyear 2017*, U.S. Env't Prot. Agency (Dec. 31, 2017), https://www.epa.gov/sites/default/files/2018-05/documents/tracksum_endyear_2017.pdf [https://perma.cc/CA42-DH6V] (showing that there was a national total of 19,961 CAFOs, and of those, 6,591 had NPDES permits).

111. Petition for a Writ of Mandamus, *supra* note 109, at 14-17 (citing U.S. Env't Prot. Agency, EPA Legal Tools to Advance Environmental Justice (May 2022), https://www.epa.gov/system/files/documents/2022-05/EJ%20Legal%20Tools%20May%202022%20FINAL.pdf#page=88 [https://perma.cc/9L9E-PNAC]).

112. Petition for a Writ of Mandamus, *supra* note 109, at 17-19.

113. Joint Motion to Refer Case to Mediation and Stay Proceedings at 1, Food & Water Watch et al. v. U.S. Env't Prot. Agency (9th Cir. Oct. 24, 2022). On January 23, 2023, EPA announced a new plan, but it ultimately just says that further information must be gathered regarding CAFOs to determine whether the current guidelines warrant revision. *Effluent Guidelines Program Plan 15*, U.S. Env't Prot. Agency (Jan. 2023), https://www.epa.gov/system/files/documents/2023-01/11143_ELG%20Plan%2015_508.pdf [https://perma.cc/W7Z9-5NXT].

114. *See* Debbie Lowe, *Farmers Push Back Against Stricter CAFO Regulations*, Carroll Cnty. Comet (May 23, 2018), https://www.carrollcountycomet.com/articles/farmers-push-back-against-stricter-cafo-regulations/ [https://perma.cc/W5BX-JCUT]; Pam Jahnke, *Dairy Groups Push Back Against Anti-CAFO Resolution*, The Mid-W. Farm Rep. (Nov. 10, 2020), https://www.midwestfarmreport.com/2020/11/10/dairy-groups-push-back-against-anti-cafo-resolution/ [https://perma.cc/WPD8-C8TZ].

local level.[115] For example, in Missouri, a state with over 500 CAFOs as of 2019 that is also plagued by environmental injustice as a result of these CAFOs, state regulation signed by Gov. Michael Parson on May 31, 2019, states that local regulations cannot be stricter than state minimum regulations, reducing the power of the people to improve safety conditions for their communities.[116] The rule also eliminated any existing stricter local regulations.[117] There is, however, an ongoing lawsuit—which was originally filed in 2019—challenging this bill.[118] Furthermore, of the many CAFOs in Missouri with a history of spills and violations, the eleven largest are currently working to reduce state oversight beyond the loopholes that they have already exploited.[119]

Another gap in regulation comes in the form of permit shields, where NPDES permit holders are shielded through the language of the CWA's "shield provision," leaving polluters potentially unchecked.[120] In the 1990s, EPA decided that to properly understand the air pollution from animal farms, a "safe harbor" period of immunity was granted to farms to monitor data.[121] However, this period was meant to last only four years but still exists over fourteen years later.[122] While health and environmental groups lobby for regulation, the livestock industry remains powerful, both because of the safe harbor immunity but also from sheer economic power as cattle production is the country's most important agricultural industry, and the United States is the world's largest beef producer and second largest beef exporter.[123] The industry is aware of its power and knows of the varying issues, but instead of changing practices it simply reduces transparency further, leaving the public in the dark.[124] This is ultimately why a two-pronged approach of data collection and transparency is necessary to begin to mitigate the harmful effects of livestock production.

IV. Analysis and Solution

A. *Analysis*

The need for regulations mandating data collection is shown through the clear harms caused by CAFOs—there are documented ecological concerns and incidents of environmental injustice stemming from the byproducts of CAFOs.[125] However, what is missing is a clear documentation of the causal link. It is widely documented and recognized in environmental law that the main byproduct of CAFOs, animal waste, results in hazardous conditions for surrounding ecosystems and communities.[126] But EPA is currently flying blind without specifics of what and how much each animal operation pollutes, especially since there are many operations that do not even require permits.[127]

In 2011, when EPA proposed the NPDES CAFO Reporting Rule, they had planned to obtain the information desired under the authority afforded to the Administrator per section 308 of the CWA.[128] Unfortunately, the proposed rule was ultimately withdrawn.[129] However, even if it had been implemented, it would have either only mandated collection of basic identifying information on

115. *See* Agriculture Creates Real Employment Act (ACRE Act), S. 2663, 115th Cong. (2018); Fair Agricultural Reporting Method Act (FARM Act), S. 2421, 115th Cong. (2018).

116. *See Injustice in Our Industrial Food System: CAFOs and Racial Inequity*, *supra* note 35 (stating, with regard to CAFOs, that:

> [u]nder this act, any orders, ordinances, rules, or regulations promulgated by county commissions and county health center boards shall not impose standards or requirements on an agricultural operation and its appurtenances that are inconsistent with or more stringent than any provisions of law, rules, or regulations relating to the Department of Health and Senior Services, environmental control, the Department of Natural Resources, air conservation, and water pollution.

Allison Kite, *Some of Missouri's Largest CAFOs Are Seeking Less Stringent State Regulation*, Mo. Indep. (June 23, 2021, 9:00 AM), https://missouriindependent.com/2021/06/23/some-of-missouris-largest-cafos-are-seeking-less-stringent-state-regulation/ [https://perma.cc/M9GG-2A57].

117. *See* Emily Moon, *Missouri Outlaws Rural Residents' Last Line of Protection Against CAFOs*, Pac. Standard (May 18, 2019), https://psmag.com/news/missouri-outlaws-rural-residents-last-line-of-protection-against-cafos [https://perma.cc/9NEZ-AD2S].

118. Jeff Haldiman, *Lawsuit Over Missouri's Large Farming Operation Rules Continues*, Fulton Sun (June 30, 2021, 11:53 AM), https://www.fultonsun.com/news/2021/jun/30/Farm-regulation-lawsuit-continues/ [https://perma.cc/G4X9-GMEA].

119. *See* Kite, *supra* note 116. Some of the loopholes include avoiding flushing the facility with water to ensure annual facility inspections instead of quarterly inspections or applying for "general operating permits" rather than a site-specific permits for each CAFO, which results in more lax state oversight even though all facilities under the general permit are in the largest categories.

120. *See* Douglas A. Henderson et al., *The Clean Water Act Permit Shield—Recent Battles*, 29 Nat. Res. & Env't 56 (2015) (describing the general dangers and loopholes surrounding the shield provision); 33 U.S.C. § 1342(k); *see also* Atlantic States Legal Found. v. Eastman Kodak Co., 12 F.3d 353, 357 (2d Cir. 1994) ("Once within the NPDES or SPDES scheme . . . polluters may discharge pollutants not specifically listed in their permits so long as they comply with the appropriate reporting requirements and abide by any new limitations when imposed on such pollutants.").

121. Joe Wertz, *How Big Farms Got a Government Pass on Air Pollution*, Ctr. for Pub. Integrity (Sept. 16, 2020), https://publicintegrity.org/environment/factory-farming-air-pollution-pass-cafos/ [https://perma.cc/TTH2-YQEW].

122. *Id.*

123. Kellan Heavican, *Environmental Groups Lobby EPA to Regulate CAFOs*, Brownfield AG News for Am. (Apr. 9, 2021), https://brownfieldagnews.com/news/environmental-groups-lobby-epa-to-regulate-cafos/ [https://perma.cc/SS7N-D6RS]; *U.S. Cattle Production*, U.S. Dep't of Agric. Econ. Rsch. Serv. (Sept. 26, 2022), https://www.ers.usda.gov/topics/animal-products/cattle-beef/sector-at-a-glance/ [https://perma.cc/38HN-TYFR]; *Animal Production*, U.S. Dep't of Agric., https://www.usda.gov/topics/animals/animal-production [https://perma.cc/8CZX-3UZX] (last visited Jan.17, 2023).

124. Nancy Fink Huehnergarth, *Big Agriculture Bullies and Lobbies to Keep Americans in the Dark*, Forbes (May 05, 2016, 11:05 AM), https://www.forbes.com/sites/nancyhuehnergarth/2016/05/05/big-ag-bullies-and-lobbies-to-keep-americans-in-the-dark/?sh=36ea98c5502c [https://perma.cc/8KQ2-QQFU].

125. *See* Adam Skolnick, *The CAFO Industry's Impact on the Environment and Public Health*, Sierra (Feb. 23, 2017), https://www.sierraclub.org/sierra/2017-2-march-april/feature/cafo-industrys-impact-environment-and-public-health [https://perma.cc/CHZ9-D7AE]; *Injustice in Our Industrial Food System*, *supra* note 35.

126. *See Why Are CAFOs Bad?*, *supra* note 3; *Environmental Hazards*, *supra* note 24.

127. *See Why Are CAFOs Bad?*, *supra* note 3; *Environmental Hazards*, *supra* note 24.

128. *See* National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65431 (proposed Oct. 21, 2011) (proposed rule would have solicited basic identifying information about all CAFOs or at least CAFOs in areas with water quality concerns); 33 U.S.C. § 1318(a)(A).

129. National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 77 Fed. Reg. 42679 (proposed July 20, 2012) (to be codified at 40 C.F.R. pts. 9, 122).

CAFOs or collection of information on CAFOs in areas with concerns about water quality, instead of all CAFOs in general.[130]

In Maryland, a state court showed that the airborne pollutant eventually reaches the Chesapeake Bay, the resulting algae blooms hurt aquatic life and the waters of the United States, and the state could be asked to do more in terms of protective measures.[131] Airborne nitrogen has already been linked to documented health concerns, and there was already clear evidence of such airborne nitrogen pollution in this instance.[132] However, it should not require such wraparound means to warrant regulation of obvious dangerous contaminants from animal operations around the country. The idea is that if a state court in Maryland can ask more of the state by mandating the regulation of nitrogen since it can eventually reach the Chesapeake Bay, more can be required of states across the country.[133] While environmental advocates in Maryland were fortunate enough to document evidence of contamination and its effects, that is not necessarily the case around the country.[134]

This brings us to the proposed solution: mandated monitoring and reporting from all CAFOs with the resulting data submitted to EPA, regardless of whether the NPDES permit was issued by a state or EPA itself. In the Maryland case, the Maryland code mandates best practices and monitoring and could potentially be required as a best practice at the national level for such facilities.[135] Beyond just implementing best practices, the proposed solution to the lack of transparency surrounding CAFOs relies on the authority provided by section 308 of the CWA.[136] If the permits are flawed by design and are the reason for the lack of regulation, EPA should be able to ask more of the individual permit applications.[137] In Idaho, for example, the flaws in the permits were noted and action was taken at the circuit court level.[138] That is not necessarily the case everywhere, as governments are actively working to decrease regulation to allow for economic growth from CAFOs.[139]

130. *See* National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Reporting Rule, 76 Fed. Reg. 65431, 65435 (proposed Oct. 21, 2011).
131. In re Assateague Coastal Trust for Judicial Review of the Decision of: the Md. Dep't of the Env't in re Land & Materials Admin. Determination, No. 482915-V, 2021 LEXIS, at *4, *12 (Md. Cir. Mar. 11, 2021); Condon, *supra* note 103.
132. *See* Condon, *supra* note 103.
133. *Id.*
134. *See id.*
135. *See* Condon, *supra* note 103; *Environmental Hazards*, *supra* note 24 (using as an example Wisconsin Department of Health Services, which does not establish appropriate best management practices and only sometimes assists other agencies, which seems rather absurd given that in the same document DHS specifies issues of mismanaged CAFOs and it would be in the state's best interest for the health of communities to establish best management practices).
136. 33 U.S.C. § 1318(a)(A).
137. *See, e.g.*, Food & Water Watch v. U.S. Env't Prot. Agency, 13 F.4th 896 (9th Cir.), *opinion withdrawn and superseded on reh'g*, 20 F.4th 506 (9th Cir. 2021) (showing an example of a court-recognized flaw in the permit itself resulting in environmental harm).
138. *See generally id.* (vacating the flawed NPDES permit).
139. NPDES Permit No. IDG010000 *Authorization to Discharge Under the National Pollutant Discharge Elimination Systems for Concentrated Animal Feeding Operations (CAFOs)*, https://www.epa.gov/sites/default/files/2020-05/documents/r10-npdes-idaho-cafo-gp-idg010000-final-permit-2020.pdf [https://perma.cc/H4GC-PG7C]. Some flawed language includes section II.A.3, where it says, "[f]or all swine, poultry and veal facilities for which construction of the facility began after April 14, 2003 (New Sources), there shall not be a discharge of manure, litter or process wastewater into waters of the United States from the production area" but makes no clear attempt to say how it would stop discharge beyond visual inspection. *Id.* Similarly, section II.B.4 asks for "site-specific conservation practices," but it only asks that they be *identified* to be implemented in non-committal language, as opposed to being actually implemented. *Id.* (emphasis added). Moreover, while section IV.C asks for "notification of unauthorized discharges resulting from manure, litter, and process wastewater storage, handling, on-site transport and application" with a timeline on when notification is mandated, it does not list clear penalties for noncompliance. *Id.*
140. *See Producers' Compliance Guide for CAFOs*, *supra* note 56, at 3; *Why Are CAFOs Bad?*, *supra* note 3.

B. Solution

1. Registry and Public Database

Every individual livestock operation is different, given that they all exist in different ecosystems that display the environmental consequences and impact in different ways. Additionally, each type of animal waste poses different threats and challenges, with additional variations based on the size of the operation. The final factor is human impact—the surrounding communities' size, demographics, and ability to effectively combat the effects also affect the environmental challenges posed. Ultimately, this means that there is no one-size-fits-all solution to fix all of the environmental harm and injustice caused by CAFOs. Moreover, while each operation files individual permits, and because some do not file at all,[140] the permitting system itself needs to change. However, due to the variation and lack of information, it is difficult to know how to fix the permits. So, before changing the permitting system itself, the first step would be to analyze all data on existing CAFOs. Ultimately, EPA should require the following information from all existing operations on an annual basis:

(1) The name and contact information for the owner/operator of the CAFO
(2) The location
    (a) The street address if applicable or at least city, county and zip code
    (b) Coordinates (longitude and latitude)
(3) Current NPDES permit status
(4) Livestock information
    (a) The type of animal
    (b) The number of animals
    (c) What they are fed (including any antibiotics and chemical additives in the feed)
(5) Size of facility overall, specifying the space specifically held for the livestock
(6) The types (and quantities) of animal waste created including but not limited to:
    (a) manure,
    (b) dead animals, and

(c) litter

(7) The exact means of storage and disposal for all animal waste

(8) The amount of different kinds of waste and pollution entering air and water.

Of the information requested, points (1) and (2) consist of simple contact information in order to find the responsible parties in the event of a violation. Point (3) simply asks what the CAFOs' current status is to see whether and for how long it is valid. Points (4) through (8) are the most important because they provide critical information that would tell us how the operations pollute the surrounding air and water and the exact type and amount of contaminants being released. The information from points (4) through (8) would also be used to evaluate CAFOs' impact on human populations. In addition, the federal government and local governments would then have the information and resources to see how densely populated surrounding communities are along with their income and poverty rates. This could be used to see how many people would be affected and find the best way to create targeted, localized solutions.

Eventually, the goal is to request the aforementioned data points from all AFOs, not just CAFOs, because smaller size and fewer animals does not prevent operations from polluting the air and water with harmful waste. Additionally, even if each individual smaller operation contributes a negligible amount of waste, depending on the locations and saturation of operations in a specific area, those small amounts could quickly add up. However, relying on current authority provided by the CWA limits the federal government to only collecting information from point sources, which include CAFOs but not AFOs.[141] The next steps are to either amend the definition of point source to include AFOs, give the federal government authority to mandate that AFOs also be regulated by NPDES permits, or simply expand EPA authority to collect information from AFOs and not just point source CAFOs. However, instead of waiting around to collect information from CAFOs and AFOs, the best first step is to use existing authority to collect data from CAFOs.

Part of the incentive to create a national database would be creating a centralized source of information while also incorporating some of the more progressive practices in place around the country.[142] An example of one such practice comes from North Carolina, which touts having the "strongest permit program for concentrated feeding operations in the country and is one of the only states that requires annual inspections of every facility."[143] Additionally, the North Carolina state government provides the general public with a document listing permit number, facility name, owner, the type of livestock, permit type, regulated activity, allowable count, number of lagoons, dates of permit issuance and expiration, and location of the livestock with an accompanying interactive map that shows the locations of the state's animal operation permits and leads the reader to recent inspection reports.[144]

Ideally, the above information collected and compiled by EPA would be made easily accessible to the general public, or at least accessible via a Freedom of Information Act ("FOIA") request.[145] This public registry would serve a twofold purpose: (1) EPA would have the data available to make further rules and (2) the lack of transparency with the general public is removed, which would allow concerned residents to know more about what is affecting their communities. Interactive maps or charts with inspection reports and permit status information, like North Carolina's, should also be made available to the public.[146] EPA could use the same tools used to create Enforcement and Compliance History Online ("ECHO") to create a similar type of database.[147]

2. Enforcement

Ideally, if regulation were created to mandate information provided in the database, it should be mandated that all existing AFOs provide the information. However, simply mandating that the information be provided would not suffice. There would need to be clear incentives for the facilities to provide complete and accurate information. Because EPA can pursue both civil and criminal action, civil enforcement and penalties would make the most sense. Though civil enforcement is stricter, it is warranted in this instance.[148] Intent should not matter and criminal

141. 33 U.S.C. § 1318(a)(A); *Animal Feeding Operations (AFOs)*, U.S. Env't Prot. Agency (July 23, 2021), https://www.epa.gov/npdes/animal-feeding-operations-afos [https://perma.cc/MLD4-3U3F]; 33 U.S.C. § 1362(14).

142. *Program Summary: Facts About North Carolina's Animal Feeding Operations Program*, N.C. Dep't of Env't Quality, https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/animal-feeding-operations/program-summary [https://perma.cc/8YLW-G8B6] (last visited Nov. 12, 2022).

143. *Id.*

144. *DWR Animal Operation Permits*, N.C. Dep't of Env't Quality, https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=85ae6392d0e94010a305eedf06e3f288 [https://perma.cc/D8JV-T5UT] (last visited Nov. 12, 2022) (interactive map showing current animal operations that require permits, with individual links for further information on each individual facility).

145. *What Information Is Available Under the FOIA?*, U.S. Dep't of Health & Hum. Servs., https://www.hhs.gov/foia/faqs/what-information-is-available-under-the-foia/index.html [https://perma.cc/2V3A-RKG4] (Sept. 17, 2015). The collected information does not fall into the nine exemptions or three exclusions of information not accessible via a FOIA request—the nine exemptions are: (1) classified national defense and foreign relations information, (2) internal agency rules and practices, (3) information that is prohibited from disclosure by another law, (4) trade secrets and other confidential business information, (5) inter-agency or intra-agency communications that are protected by legal privileges, (6) information involving matters of personal privacy, (7) certain information compiled for law enforcement purposes, (8) information relating to the supervision of financial institutions, and (9) geological information on wells. *See id.* The three exclusions are rarely used and pertain to "certain sensitive law enforcement and national security matters." *Id.*

146. *Program Summary: Facts About North Carolina's Animal Feeding Operations Program*, *supra* note 142; *DWR Animal Operation Permits*, *supra* note 144 (interactive map showing current animal operations that require permits, with individual links for further information on each individual facility); *Interactive CAFO Map and Story Map*, Mo. Coal. for the Env't (Nov. 11, 2016), https://moenvironment.org/interactive-cafo-map/ [https://perma.cc/U74B-GGHK] (interactive, third-party controlled map of the expansion of CAFOs from 2016 to 2019).

147. *ECHO Enforcement and Compliance History Online*, *supra* note 87.

148. *Basic Information on Enforcement*, *supra* note 74.

violations would likely be difficult to prove beyond a reasonable doubt in instances of spills, natural disasters, or broken containers that resulted in leaks. By contrast, when intent does not matter, action can still be taken through civil enforcement. Additionally, mandated cleanup under civil enforcements would be an effective means of imposing consequences that alleviate the situation. This remedy, as opposed to simple fines that allow these large facilities to keep polluting or imprisoning people in charge with no actual mitigation action, would have a positive effect on the environment and communities. Civil settlements also offer the chance for responsible parties to undertake SEPs that could similarly involve environmental enhancement or could improve the public health of affected communities located near CAFOs.

These civil penalties would stem from either a refusal to submit information or for submitting incorrect information. To ensure accurate information, there would be the threat of inspections, not just from the state, but from EPA itself under its CWA authority.[149] However, beyond just the threat of inspection, CAFOs are responsible for self-audits to make sure that they are always in compliance with the conditions set in their permit.[150] If EPA were to have the self-reported numbers publicly available, it would be easier for the public to see if their communities are affected and whether their local facility's alleged contaminant numbers align with the effects faced by their community and the local ecosystem.

V. Conclusion

The harms caused by CAFOs are clear. Beyond contributing heavily to climate change and global warming, CAFOs have immediate harmful consequences on the surrounding ecosystems through air and water pollution and further harm impoverished communities and already-marginalized communities of color. However, given the power of the livestock industry and the continued lack of transparency when it comes to the data on the actual pollution caused by CAFOs, it is difficult to take clear action to remedy these issues. Ultimately, EPA must act under its CWA authority to increase the national minimum standard for NPDES permits to mandate annual reporting of all data that is then readily available to the public.

149. *See* 33 U.S.C. § 1318(a)(B)(ii); 33 U.S.C. § 1318(c).

150. *Clean Water Act (CWA) Compliance Monitoring*, U.S. Env't Prot. Agency, https://www.epa.gov/compliance/clean-water-act-cwa-compliance-monitoring [https://perma.cc/9DGN-XR3M] (June 29, 2022).

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