FROM COMPREHENSIVE LIABILITY TO CLIMATE LIABILITY: THE CASE FOR A CLIMATE ADAPTATION RESILIENCE AND LIABILITY ACT (CARLA)

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Introduction

The Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund")[1] created an unprecedented, sweeping scheme to fund the cleanup of contaminated sites across the United States. The depth and breadth of its reach are unique in American law. By design, very few major industrial corporations can evade CERCLA's grasp. Nonetheless, the

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1. 42 U.S.C. §§ 9601–9675.

statute passed some four decades ago with bipartisan support. It is hard to imagine such a statutory liability scheme making its way through Congress, irrespective of the underlying problem it sought to address. A snapshot of the historical, legal, and political context of CERCLA's passage in 1980 has the potential to guide future efforts at national policymaking through the imposition of corporate liability.

Now, the world confronts another watershed moment in environmental history, and past actors face a potential flood of liability. Tort cases in jurisdictions across the nation assert that the fossil fuel industry must compensate the public entities already footing the bill for climate adaptation.[2] The potential for disparate results in these cases over the next decade threatens to undermine the necessary infrastructure improvements they seek to facilitate. As with the toxic contamination plaguing the country at mid-century, citizens have taken notice of the harms at their doorsteps and underequipped local governments have been forced to lead the response.[3] Back then, the accumulated harm bubbled up in punctuated disasters, and the federal government responded by enacting CERCLA in 1980 to bring some order to what had been disjointed, ineffective efforts to clean up contamination across the country. The federal government can wait for some climate-induced disaster to prompt similar action, or, drawing on lessons from CERCLA, act swiftly to draft and pass what this work calls a "Climate Adaptation Resilience and Liability Act" or "CARLA."

Much of the situation is different in 2023 from that in 1980. However, some important legal, political, and practical elements today mirror those that paved the way for CERCLA's passage. A statutory scheme for climate liability thus could serve as an important feature of climate adaptation policy as we move further into a century punctuated by the harsh realities of a changed climate. The focus on adaptation strategies (e.g., infrastructure improvements and land use changes in coastal communities)[4] rather than punitive damages (i.e., penalties) makes the CARLA-CERCLA parallel apt. As with cleanup costs, adaptation costs are necessary to protect human and environmental health; someone must bear them. CARLA, like CERCLA before it, would efficiently

2. *See infra* Part II.

3. *See* Maggie Astor, *As Federal Climate-Fighting Tools Are Taken Away, Cities and States Step Up*, N.Y. TIMES (July 1, 2022), https://perma.cc/GJ5Z-S5HV; David G. Victor & Mark Muro, *Cities Are Pledging to Confront Climate Change, but Are Their Actions Working?*, BROOKINGS (Oct. 22, 2020), https://perma.cc/SL3D-5YM7 ("Since 1991, over 600 local governments in the United States have developed climate action plans that include greenhouse gas inventories and reduction targets, reflecting growing public concern about the consequences of a warmer planet. Recently, this local action has been accelerating."); Kent E. Hanson & Adam Babich, *Taking Charge: Local Governments and Hazardous Substances*, 51 J. ENV'T HEALTH 139, 139 (1989) (describing how "practically every community" has confronted environmental contamination and how CERCLA can provide necessary tools to local governments trying to address these problems).

4. *See infra* Part I.B.

distribute those costs amongst the parties most responsible for their coming to be.

Both torts theory and climate policy support a statutory scheme that imposes liability for climate adaptation costs on fossil fuel producers. For almost two decades, torts scholars have discussed the application of various theories of liability—nuisance, trespass, negligence, and more—to the emission of greenhouse gases ("GHGs").[5] Much of that work argues that traditional principles of public nuisance justify injunctive relief to cap further emissions of defendant polluters and monetary damages to compensate those already harmed by the climate crisis.[6] The arguments for those remedies on that tort theory provoked the first iteration of climate change torts cases against emitters of greenhouse gases in federal courts. In *American Electric Power v. Connecticut*[7] and *Native Village of Kivalina v. Exxon Mobil Corp.*,[8] the courts promptly shut the doors on that line of cases—though importantly without rejecting the theoretical application of torts principles to climate harms. The second generation of climate change torts cases have focused on the potential state law liability of the compa-

5. *See* Douglas Kysar, *What Climate Change Can Do about Tort Law*, 41 ENV'T L. 1, 2–3 n.3 (2011) (citing Randall S. Abate, *Automobile Emissions and Climate Change Impacts: Employing Public Nuisance Doctrine as Part of a "Global Warming Solution" in California*, 40 CONN. L. REV. 591 (2008); Myles Allen et al., *Scientific Challenges in the Attribution of Harm to Human Influence on Climate*, 155 U. PA. L. REV. 1353 (2007); David A. Grossman, *Warming Up to a Not So-Radical Idea: Tort-Based Climate Change Litigation*, 28 COLUM. J. ENV'T L. 1 (2003); Shi-Ling Hsu, *A Realistic Evaluation of Climate Change Litigation Through the Lens of a Hypothetical Lawsuit*, 79 U. COLO. L. REV. 701 (2008); David Hunter & James Salzman, *Negligence in the Air: The Duty of Care in Climate Change Litigation*, 155 U. PA. L. REV. 1741 (2007); Timothy D. Lytton, *Using Tort Litigation to Enhance Regulatory Policy Making: Evaluating Climate-Change Litigation in Light of Lessons from Gun-Industry and Clergy-Sexual-Abuse Lawsuits*, 86 TEX. L. REV. 1837 (2008); Thomas W. Merrill, *Global Warming as a Public Nuisance*, 30 COLUM. J. ENV'T L. 293 (2005); Matthew F. Pawa & Benjamin A. Krass, *Global Warming as a Public Nuisance:* Connecticut v. American Electric Power, 16 FORDHAM ENV'T L. REV. 407 (2005); Christopher R. Reeves, *Climate Change on Trial: Making the Case for Causation*, 32 AM. J. TRIAL ADVOC. 495 (2009); Amelia Thorpe, *Tort-Based Climate Change Litigation and the Political Question Doctrine*, 24 J. LAND USE & ENV'T L. 79 (2008); Jonathan Zasloff, *The Judicial Carbon Tax: Reconstructing Public Nuisance and Climate Change*, 55 UCLA L. REV. 1827 (2008); Myles R. Allen & Richard Lord, *The Blame Game: Who Will Pay for the Damaging Consequences of Climate Change?*, 432 NATURE 551 (2004); Matthew F. Pawa, *Global Warming: The Ultimate Public Nuisance*, 39 ENV'T L. REP. 10230 (2009); Eduardo M. Peñalver, *Acts of God or Toxic Torts? Applying Tort Principles to the Problem of Climate Change*, 38 NAT. RES. J. 563 (1998); Amy Sinden, *Allocating the Costs of the Climate Crisis: Efficiency Versus Justice*, 85 WASH. L. REV. 293 (2010)).

6. *See, e.g.*, Jonathan Zasloff, *The Judicial Carbon Tax: Reconstructing Public Nuisance and Climate Change*, 55 UCLA L. REV. 1827 (2008); Matthew F. Pawa, *Global Warming: The Ultimate Public Nuisance*, 39 ENV'T L. REP. 10230 (2009).

7. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011).

8. Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849 (9th Cir. 2012).

nies responsible for putting greenhouse-gas-generating fossil fuels into the stream of commerce.[9] These cases seek monetary damages to pay for the actual, realized or soon-to-be realized costs of adaptation measures currently paid by state and local governments.[10] Relatively little has been written about this emerging strategy, and no case has yet progressed beyond the pretrial process. The underlying torts justification for these cases is sound from both an instrumentalist and corrective justice perspective. Put simply (and discussed in more detail *infra*), holding fossil fuel companies liable for adaptation costs internalizes the externality these companies imposed upon society. Forcing them to bear that expense will both disincentivize further ubiquitous production and sale of fossil fuels *and* punish them for their prior bad acts. The former is an instrumental goal while the latter is a corrective justice goal. From the perspective of climate policy, many have long maintained that some form of carbon tax presents the most efficient way to address both the sources and the effects of climate change.[11] Liability for adaptation, particularly if streamlined and regularized by federal statute, would serve a very similar function in terms of aligning economic incentives with climate mitigation policy. And focusing that liability on the relatively few actors who provide the root source of the greenhouse gas problem is the most efficient manner of creating those incentives. Furthermore, the necessity of adaptation, in addition to mitigation, is no longer a question for climate policymakers. The only question now is how much of it we will need and who will pay for it.[12] A statutory adaptation liability scheme would answer that crucial second part of the policy equation.

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9. *See* Karen C. Sokol, *Seeking (Some) Climate Justice in State Tort Law*, 95 WASH. L. REV. 1383, 1406–07 (2020) (describing the "second wave" of climate tort actions and the cases' emphasis on state tort liability of fossil fuel entities).

10. *See id.* at 1406 (describing the second wave as characterized by "claims seeking compensation from fossil fuel industry defendants for current and future damages to infrastructure, land and other natural resources, residents' health and property, and livelihoods").

11. *See* SHI-LING HSU, THE CASE FOR A CARBON TAX: GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY 27 (2011) (discussing how a carbon tax would be a "Pigouvian" tax, "a unitary tax levied to make an emitter pay for the externalities caused by its emissions." This type of tax could potentially "induce just the *right amount* of carbon dioxide emissions reductions.").

12. It should be noted that, unfortunately, national politics have seemingly regressed on the question of the necessity of addressing climate change through mitigation or adaptation over the past two decades. Many in Congress remain skeptical of the need to take action. *See* Justin Worland, *Climate Change Used to Be a Bipartisan Issue. Here's What Changed*, TIME, July 27, 2017, https://perma.cc/JA7G-34UP. That lack of consensus, however, does not reflect the reality of the oncoming costs; the IPCC has observed adaptation already increasing and made clear (with "high confidence") that more adaptation costs will be incurred. IPCC, *Summary for Policymakers*, *in* CLIMATE CHANGE 2022: IMPACTS, ADAPTATION AND VULNERABILITY. CONTRIBUTION OF WORKING GROUP II TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 1, 20 (H.-O. Pörtner et al. eds., 2022).

In the pages that follow, this paper will make the first scholarly case for a Climate Adaptation Resiliency and Liability Act ("CARLA"). It will do so by comparison to the paradigmatic example of statutory environmental liability – CERCLA. The first part looks at the parallel historical contexts in the early 1980s and the early 2020s. The second part explains why, just as with contaminated property forty years ago, the torts system, without statutory uniformity, will prove an inefficient and inadequate solution to the crisis of environmental harm we currently face. The third part expands upon the affirmative case for CARLA from practical and theoretical perspectives. Finally, the work explains how three features came to define CERCLA liability—strict, joint and several, and retroactive—and how those features should function in CARLA.

I. The Early 1980s and the Early 2020s

A. The 1980s

Liability for destructive and harmful waste management did not manifest out of thin air in the late 1970s. The environmental movement of that decade simply brought new attention to an age-old problem. Records indicate that medieval common law courts in England recognized that release and disposal of waste may lead to a trespass cause of action.[13] The moral obligation to clean up the pollution one causes dates back even further.[14] Nonetheless, formal litigation advancing these principles in the corporate context occurred relatively infrequently in twentieth century America. It was not, as one might expect, a renewed surge in actual tort cases, but rather theoretical liability, that prompted federal attention to the problem in the late 1970s.

Prior to the passage of CERCLA, tort litigation seeking compensatory or injunctive relief based on contamination of property by hazardous wastes was rare. The relevant reported cases from that time primarily involve the cleanup of oil spilled in or near drinking water supplies.[15] Even cases seeking personal injury damages based on exposure to hazardous substances, so-called "toxic

13. Selden Soc'y, Select Cases of Trespass from the King's Courts 1307–1399, at lxxxii-lxxxiii (Morris S. Arnold ed., 1985) (noting trespass cases based on a defendant's deposit of "filth" on the plaintiff's land which contaminated the water supply and caused human illness).

14. *See, e.g.*, The Dialogues of Plato: Laws, Book 8, Section 845(e) (Jowett B trans., 4th ed. 1953).

15. *See, e.g.*, Phillips v. Sun Oil Co., 121 N.E.2d 249 (1954). There were some admiralty and state statutory remedies available to deploy when the release of oil (i.e., spill) occurred in navigable waters. *See* Stephen E. Roady, *Remedies in Admiralty for Oil Pollution*, 5 Fla. State U. L. Rev. 361, 361 (1977) (citing Florida's Pollutant Spill Prevention and Control Act, Fla. Stat. § 376 (1975)).

torts," were relatively novel and uncommon.[16] Indeed, the first case to use the term "toxic torts" to describe the factual and legal issues at stake when releases of hazardous substances affect human health was the Agent Orange Products Liability Litigation in 1978–79.[17]

One significant development in torts concerned strict product liability. As that doctrine matured over time, courts defined increasingly narrowly the category of "abnormally dangerous activities" to which strict liability attached, responding to a variety of efficiency-related arguments.[18] Sites contaminated by hazardous waste still needed cleaning up, which was bound to be costly. In this area, legal and other transaction costs had the potential to dwarf the underlying problem and slow the necessary response. CERCLA provided a vehicle for consistency and cost allocation. The history of strict liability after CERCLA's passage confirms the trajectory of the common law in this area of torts. As strict liability became commonplace for hazardous waste disposal under interpretations of CERCLA, courts became more reluctant to impose strict liability for property damage caused by dangerous activities outside of the statutory scheme. By 1983, just three years after CERCLA's passage, a report of the Superfund Study Group conducted under section 301(e) of CERCLA to evaluate the adequacy of existing common law and statutory remedies had concluded that a private litigant faces substantial barriers to recovery for property damage and personal injury.[19]

The state of the common law around CERCLA's passage only partially set the table. The United States Congress had just completed a decade of environmental lawmaking (the famous 1970s); the decade that would come to define

16. *See generally* TOXIC TORTS AND PRODUCT LIABILITY: CHANGING TACTICS FOR CHANGING TIMES 11 (Michael A. Brown ed., 1989); Robert F. Blomquist, *An Introduction to American Toxic Tort Law: Three Overarching Metaphors and Three Sources of Law*, 26 VAL. U. L. REV. 795, 795 (1992) ("Toxic tort law is of relatively recent vintage in American law. Its origins can be traced to the burgeoning growth in the industrial production of synthetic chemical substances following World War II and society's reaction to this growth.").

17. *In re* Agent Orange Products Liability Litigation, 506 F. Supp. 737, 743 (E.D.N.Y. 1979) ("How are soldiers of the United States to be compensated for toxic torts inflicted by multinational conglomerate corporations?").

18. *See* Richard A. Posner, *Strict Liability: A Comment*, 2 J. LEGAL STUD. 205, 221 (1973) (arguing that application of broad strict liability theory is not economically efficient and imposes unavoidable costs on society without sufficient social value); Gerald W. Boston, *Strict Liability for Abnormally Dangerous Activity: The Negligence Barrier*, 36 SAN DIEGO L. REV. 597, 598 (1999) (arguing that strict liability for abnormally dangerous activities "has evolved to the point of near extinction because courts have concluded that the negligence system functions effectively to deter the serious risks posed by the activities involved").

19. James R. Zazzali & Frank P. Grad, *Hazardous Wastes: New Rights and Remedies? The Report and Recommendations of the Superfund Study Group*, 13 SETON HALL L. REV. 446, 458–63 (1983).

the field.[20] Prior to that time, pollution control—by way of direct regulation or liability rules—was theoretically a proper subject of state legislation. In practice, most states avoided the area of law. For example, prior to the Clean Air Act's passage, although motor vehicle emissions were a known pollutant, only California took advantage of the jurisdictional opening by adopting new vehicle regulations in 1960. What's more, the predecessors to the Clean Air Act of 1970[21] included several provisions that specifically provided opportunities for states to become involved in the regulation and control of interstate air pollution, but the states largely declined the invitation.[22] These included the opportunity to associate in interstate compacts,[23] to form interstate air quality control agencies in federally designated regions,[24] and to set air quality standards for these regions.[25]

The story of lead paint regulation followed a similar pattern. The majority of states avoided the issue[26] until the federal government stepped in and banned lead-based paint in the 1970s.[27] Tort litigation under the common law was similarly rare following the federal ban, considered only by "activists" and ulti-

20. *See* Anthony Moffa, *Constitutional Authority, Common Resources, and the Climate*, 2022 UTAH L. REV. 169, 173 (2022) ("The 1970s has a special place in the history of environmental law. In that decade, Congress drafted and passed the sweeping legislation that would come to occupy the field. Congress, of course, derived the power to pass those foundational statutes from the Constitution.").

21. 42 U.S.C. §§ 7401–7671.

22. *See* Arthur C. Stern, *History of Air Pollution Legislation in the United States*, 32 J. AIR POLLUTION CONTROL ASS'N 44, 47 (1982) ("Prior to the Clean Air Act Amendment of 1970, which set a completely new set of federal-state relations in air pollution control, there were several provisions of federal legislation in which states could have become involved but in which the states unanimously elected not to become involved."); *see also id.* ("There has been great reluctance by the states to set air quality standards until forced to do so by the promulgation of National Ambient Air Quality Standards. Prior to 1960 there were no state air quality or deposited matter standards. By 1966, [only] ten states, California, Colorado, Delaware, Missouri, Montana, New York, Oregon, Pennsylvania, South Carolina, and Texas had adopted Ambient Air Quality standards."); Christopher D. Ahlers, *Origins of the Clean Air Act: A New Interpretation*, 45 ENV'T L. 75, 89–90 (2015) (describing these provisions funding and empowering states as "la[ying] the roots for modern regional approaches to the interstate problems of ozone, sulfur dioxide and nitrogen oxides, and greenhouse gases," which are all initiatives and programs developed decades later under a different Clean Air Act; no examples from the time period between 1963–1970 were cited).

23. Clean Air Act of 1963, Pub. L. No. 88-206, § 2(c), 77 Stat. 392, 393.

24. Air Quality Act of 1967, Pub. L. No. 90-148, §§ 106–07, 81 Stat. 485, 490–91.

25. *Id.* § 108.

26. *See* David Rosner & Gerald Markowitz, *Why It Took Decades of Blaming Parents Before We Banned Lead Paint*, THE ATLANTIC (Apr. 22, 2013), https://perma.cc/JY95-452Q (describing the few cities that tried to address lead paint prior to federal action—Baltimore, New York, Chicago—and the opposition and difficulties faced).

27. *See* 42 U.S.C. § 63; *see also* 16 C.F.R. § 1303 (banning residential lead-based paint manufactured after February 27, 1978).

mately dependent on not-yet-existent state and local standards.[28] Then, some states began to add their own flavor to the overarching federal scheme.[29] Again, this inaction persisted despite a clear jurisdictional opening and a known pollution problem.[30]

This is not to say that states did not attempt to control pollution within their borders, particularly with the aim of cleaning up waterways and drinking water supplies. However, many of these early attempts by local and state governments to regulate environmental harms were frustrated by the ease with which another city or state could undercut regulations and attract business, supercharged by the ability of a single industry to overwhelm a single locality.[31] This largely explains why many of the earliest federal laws simply provided financial assistance to states to support their governments in the face of corporate resistance and potential economic pain.[32] When that approach did not bear the desired fruit of cleaner environments, at least some state and local officials joined the push to pressure the federal government to step in more aggressively.[33] Thus, pressure on the federal government to consolidate regulations

28. *See* Martha R. Mahoney, *Four Million Children at Risk: Lead Paint Poisoning Victims and the Law*, 9 STAN. ENV'T L.J. 46, 58, 60 (1990) (noting the reliance on statutory and regulatory standards and describing torts suits against landlords as "strikingly few in number" and against paint manufacturers as "activist[ ]" litigation emerging around 1970).

29. *See, e.g.*, Lead Poisoning Control Act, ME. STAT. tit 22 §§ 1314–1330.

30. *See* David Rosner et al., *J. Lockhart Gibson and the Discovery of the Impact of Lead Pigments on Children's Health: A Review of a Century of Knowledge*, *in* 120 PUB. HEALTH REPS., SPECIAL REPORT ON LEAD POISONING IN CHILDREN 296 (2005) (describing Gibson's seminal article from 1904 and the resulting wake).

31. *See* Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196, 1212 (1977) ("Given the mobility of industry and commerce, any individual state or community may rationally decline unilaterally to adopt high environmental standards that entail substantial costs for industry and obstacles to economic development for fear that the resulting environmental gains will be more than offset by movement of capital to other areas with lower standards."); Kirsten Engel, *State Environmental Standard-Setting: Is There a "Race" and is it "to the Bottom"?*, 48 HASTINGS L.J. 271, 278 (1997) (arguing that "the neoclassical model" and "empirical realities" demonstrate that "there is little reason to believe that state environmental standards established in the absence of a federal framework will be optimal"). *But see* Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992) (arguing that states would not engage in a competition to attract industry by lowering environmental standards in the absence of federal regulation).

32. *See* Water Pollution Control Act of 1948, Pub. L. No. 80-845, 62 Stat. 1155; Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322.

33. *See* Mary Graham, *Environmental Protection & the States: 'Race to the Bottom' or 'Race to the Bottom Line'?*, BROOKINGS (Dec. 1, 1998), https://perma.cc/F2B4-MKB4 ("When Congress laid the foundation for today's environmental regulation in the early 1970s, the idea that states inevitably cut corners in pollution control and conservation to attract business was a powerful argument for national action.").

preceded the most significant federal regulation of pollution, including CERCLA. CERCLA was the last big piece of the pollution control picture. It tried to answer the question of who should clean up the mess from the preceding era of unregulated industrial activity.

The rise of the chemical industry and the increased reliance on chemical products for industrial *and* household use made salient the issue of human exposure to hazardous wastes.[34] Several prominent environmental and public health incidents involving chemicals captured political attention. Most prominently, in the summer of 1976, twenty-five years after the Hooker Chemical Company stopped using the Love Canal as an industrial dump, toxic compounds leached into the backyards and basements of 100 homes and a public school built on the banks of the canal.[35] The community demanded the federal government take action, and President Carter declared an emergency[36] under the Stafford Act[37] and called for swift congressional action. The Senate, specifically, dug deeper into the history of toxic contamination, focusing on "three major pre-Love Canal incidents that came to national attention—the kepone contamination of the James River, the PCB (polychlorinated biphenyl) contamination of the Hudson River, and the contamination of Michigan livestock by the ingestion of PBBs (polybrominated biphenyls)."[38] And an EPA study documented the scope of the problem, cataloguing reported "hazardous material incidents" between 1977 and 1979.[39] During the study period, EPA recorded some 3,076 incidents, most of which were reported to the agency voluntarily.[40] There was no question the problem was even bigger than the limited data suggested. The risks of exposure to hazardous substances manifested in a wide variety of locations across the United States, affecting a wide swath of the population (if not all of it).

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34. S. REP. NO. 848, at 6 (1980).
35. *See* Eckardt C. Beck, *The Love Canal Tragedy*, EPA J., Jan. 1979, at 17–20; CAROL S. SWITZER & LYNNA A. BULAN, CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (SUPERFUND), 3–4 (2002); EPA, *Superfund's 40th Anniversary - A Look-Back at the Decades* (May 2, 2022), https://perma.cc/FM2X-3LF2 ("[P]ublic perception about the dangers at Love Canal served as a catalyst for elected officials to write the first federal legislation called Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund").
36. *See* Letter from Pres. Jimmy Carter to Hon. Patricia Roberts Harris, Sec. of Housing and Urban Development (Aug. 7, 1978) (on file with author).
37. Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. §§ 5121–5207.
38. Frank P. Grad, *A Legislative History of the Comprehensive Environmental Response, Compensation, and Liability Act ("Superfund")*, 8 COLUM. J. ENV'T L. 1, 7 (1982) (citing S. REP. No. 96-848 (1980)).
39. ENV'T PROT. AGENCY, HAZARDOUS MATERIALS INCIDENTS REPORTED TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGIONAL OFFICES FROM OCTOBER 1977 THROUGH SEPTEMBER 1979, at iii (1980).
40. *See id.*

As the decade of environmental legislation came to an end in 1979, an important gap in coverage emerged. Although the Resource Conservation and Recovery Act ("RCRA") prospectively addressed management and disposal of hazardous waste,[41] it did nothing to deal with the thousands of existing sites already contaminated by past owners and operators, insolvent owners and operators, or both. The contamination at such sites posed equal, or greater, risk to persons and property in their immediate vicinity than the risk posed by the future and ongoing hazardous waste storage, treatment, and disposal regulated by RCRA. The large number of existing hazardous waste sites could partially be attributed to the decades of under-regulation of disposal activities by state and local governments that preceded RCRA. The emergence of at least some of these environmental hazards paradoxically also resulted from the preceding decade of tough regulatory statutes, RCRA among them. Increased oversight and regulation drove up compliance costs, which in turn drove many hazardous-waste-generating businesses to abandon operations. Consequently, by the end of the 1970s, the number and visibility of hazardous waste sites across the country were increasing.[42]

With respect to CERCLA, the nature of the problem—contaminated real property—affected both the push for federal action and the type of tool (i.e., a liability rule) selected. The importance of property ownership and accompanying capital and wealth accumulation feature prominently in the American story. As RCRA came into maturity, two market effects emerged. First, dealing with hazardous waste legally became more difficult and more expensive. Bad actors stored—or worse, just outright dumped—waste on their properties to avoid the complication and expense of compliance with new environmental laws and regulations.[43] Others who had been disposing of waste cheaply for years simply went out of business, leaving abandoned, contaminated sites in their wake.[44]

41. 42 U.S.C. §§ 6901–6908.

42. *See* James J. Florio, *Congress as Reluctant Regulator: Hazardous Waste Policy in the 1980's*, 3 YALE J. ON REG. 351, 355 (1986) ("As Congress and the Administration learned more about past hazardous waste disposal practices and their effect on the environment, they soon realized that the country faced an environmental crisis. . . . Congress recognized that, aside from the regulatory problems addressed in RCRA, a remedial program was needed to clean up existing hazardous waste dumps. . . . In community after community, officials discovered sites where chemical wastes had been dumped in the ground for years, or even decades. The sites were simply abandoned, and in many cases the owners had disappeared. No one took responsibility for these abandoned sites, and the local, state, and federal governments had neither the legal authority nor the resources to clean them up.").

43. *See* Karin Oliva, *Lender Liability Under CERCLA*, 68 S. CAL. L. REV. 1417, 1417 (1995) (citing 126 CONG. REC. H26,342 (daily ed. Sept. 19, 1980) (statement of Rep. Gore)) (In discussing the loophole created by RCRA's inapplication to abandoned or inactive sites, "Congress estimated that industry annually disposed of one hundred billion pounds of hazardous waste, the equivalent of six hundred pounds per person-ninety percent of it improperly.").

44. *See* Florio, *supra* note 42, at 355.

Second, these sites where hazardous wastes had been disposed of, either illicitly after RCRA or prior to RCRA's enactment, became available for acquisition. However, predictably, very few entities had any interest in acquiring them for fear of potential liability for either personal injuries or cleanup costs.[45] At least with respect to allocating the latter species of liability, a federal liability statute presented an attractive solution.

The congressional debate on the legislation that would eventually become CERCLA[46] recognized these legal and practical realities. Starting in 1979, the United States House of Representatives introduced two separate bill packages and the Senate introduced one package. The legislative history of CERCLA itself is a conglomeration of the efforts on these predecessor bill packages, which eventually were superseded by the rather hastily constructed bipartisan compromise bill.[47]

The Chemical Manufacturer's Association ("CMA"), as well as lobbyists for other industries facing potential liability, bent the ear of sympathetic lawmakers working on the proposed legislation that would become CERCLA.[48] The CMA was prominently and actively involved in negotiations over the eventual terms of CERCLA.[49] Surprisingly, industry did not line up in complete opposition to a federal solution to the problem of contaminated sites. The CMA's members opposed any increase in liability from common law principles (a point on which they ultimately lost) but had no problem with the government stepping in to help clean up so-called "orphaned" sites.[50] On this latter point, for the CMA, and many members of Congress, the devil lay in the details. Everyone knew that a pot of money would need to be made available to assist with the cleanup of sites where no solvent liable party existed. Thus, a central feature of CERCLA negotiations had to do with how much money the

45. *See* Joel A. Mintz, *Abandoned Hazardous Waste Sites and the RCRA Imminent Hazard Provision: Some Suggestions for a Sound Judicial Construction*, 11 HARV. ENVTL. L. REV. 247, 254 (1987) ("The first estimate of the number of abandoned disposal sites was made in a 1979 study which indicated that between 32,000 and 50,000 sites contain some hazardous wastes.").

46. 42 U.S.C. §§ 9601–9657.

47. Grad, *supra* note 38, at 1 ("Although Congress had worked on 'Superfund' toxic and hazardous waste cleanup bills and on parallel oil spill bills for over three years, the actual bill which became law had virtually no legislative history at all. The bill which became law was hurriedly put together by a bipartisan leadership group of senators (with some assistance from their House counterparts), introduced, and passed by the Senate in lieu of all other pending measures on the subject.").

48. *See* ANDREW KARCH & SHANNA ROSE, RESPONSIVE STATES: FEDERALISM AND AMERICAN PUBLIC POLICY 137 (2019); Joanne Omang, *Fight Over Superfund for Chemical Dumps May Peak This Week*, WASH. POST (Nov. 17, 1980), https://perma.cc/JTT4-Q82T.

49. *See* Omang, *supra* note 48.

50. R.A. Roland & W.M. Stover, *CMA Comes to Grips with Hazardous Wastes*, 125(3) CHEM. WEEK, 22–23 (1979).

government was going to establish for a fund, what percentage of the fund would be generally charged via a tax, and which industries would pay it.[51]

After President Carter's emergency declaration and plea for action, the House of Representatives introduced H.R. 85 in January of 1979.[52] Responding to the Love Canal situation, and consistent with the torts activity around environmental cleanups discussed above, the first proposed legislation targeted oil, styling itself the Oil Pollution Liability and Compensation Act.[53] After introduction, the bill proceeded to review before the Committee on Merchant Marine and Fisheries, the Committee on Public Works and Transportation, and the Committee on Ways and Means. The former two committees reported the bill out with no major changes about a year apart.[54] The Ways and Means Committee, acting last, considered and proposed some amendments to the legislation.[55] Of particular note, the committee marked up language around liability and added the phrase "jointly, severally and strictly liable for all damages."[56] In September of 1980, the House passed the bill with the amended language.

The second House bill package, H.R. 7020,[57] began in the spring of 1980 as the Hazardous Waste Containment Act. The bill proceeded to the Committee on Interstate and Foreign Commerce, which reported it out in the form of an amendment to RCRA that, similar to H.R. 85, imposed strict joint and several liability.[58]

Over in the Senate, S. 1480 was introduced and debated concurrently with the house debate of H.R. 7020.[59] First introduced in the summer of 1979 as Environmental Emergency Response Act, the Senate sent the bill to the Committee on Environment and Public Works, who subsequently referred it to a subcommittee, where it sat until the spring of 1980.[60] The full committee marked up the proposed legislation and referred it to the Committee on Fi-

51. *See* S. REP. NO. 96-848, at 101 (1980) ("[The Chemical Manufacturers' Association] suggests that the Administration's proposal unfairly places the entire financial burden of Superfund on the chemical industry. Instead, CMA believes that funds should be provided by the general taxpayer."); *see also* Grad, *supra* note 38, at 8 (describing the Committee on Environment and Public Works' conclusions about how to impose the costs of a fund on the chemical industry).

52. *See* Grad, *supra* note 38, at 1 (citing H.R. 85, 96th Cong. (1979)).

53. *See id.* at 1–7.

54. *See id.* at 3.

55. H.R. REP. NO. 96-172, pt. III (1980).

56. *See* Grad, *supra* note 38, at 7.

57. *Id.* at 2 (citing H.R. 7020, 96th Cong. (1980), 126 CONG. REC. H26,769–85 (daily ed. Sept. 23, 1980)).

58. *Id.*

59. *Id.* at 2 n.6 (1982) (citing S. 1480, 96th Cong. (1979), 126 CONG. REC. S30,987 (daily ed. Nov. 24, 1980)).

60. *See id.* at 6.

nance.[61] The Senate, however, never considered the bill as it was reported out of committee.[62] Instead, in the lame duck session of Congress following the election of President Reagan, debate commenced on a different version of S. 1480.[63]

A fascinating portion of the congressional record then captures some legislative trickery. The bill was introduced with an amendment that prohibits further amendments and in fact was itself a whole new bill, which was subsequently referred to as the "compromise bill."[64] Debate on the bill compared it to H.R. 7020, but it was not identical.[65] The Senate passed the compromise bill on Nov. 24, 1980.[66] The House, then, passed the compromise bill on December 3, 1980. President Carter signed it one week later.[67]

Congressional debate centered on the liability provisions. A significant constituency in the House of Representatives believed strong liability provisions essential to any bill.[68] From their perspective, strict, joint and several liability was an intended, central feature of the Superfund scheme. Provisions indicating as such could be found in both H.R. 85 and H.R. 7020 when they were trans-

61. *See id.*

62. *See id.* A bill with the S. 1480 designation (but not the bill reported by the Committee) was ultimately considered by the Senate on November 24, 1980.

63. *See id.* at 19.

64. *See id.* at 20 (quoting 126 CONG. REC. at S14,948 (daily ed. Nov. 24, 1980) ("Mr. President, the Senators who are the principal parties with respect to this bill and who are most knowledgeable concerning the problems attendant thereto have worked diligently over a period of some days and many hours to achieve a compromise solution by way of amendment which is now ready to be offered. The distinguished minority leader and I have discussed the amendment with Mr. Randolph, who is the chairman of the committee; with Mr. Stafford, who is the ranking minority member of the committee; with Mr. Bradley, who is one of the foremost among those who are supporters of the effort to legislate in this area during this session; with Mr. Moynihan, who is on the Finance Committee; with Mr. Helms, who is equally interested; and with other Senators. We have come to the conclusion, based on their desire as well as ours to achieve a feasible solution, considering the time constraints and other factors, that Senator Baker and I will cosponsor the amendment that has been worked out and that we will oppose any amendments thereto. I am ready to proceed by the offering of the amendment and to add my name as a cosponsor, and to support the amendment against amendments thereto. The Acting President pro tempore: The minority leader is recognized. Mr. Baker: Mr. President, I thank the majority leader, and I congratulate him on the statement he has just made. I believe that this is a good result. It is an appropriate thing for the Senate to do. I fully expect that the substitute which will be offered shortly, and which I will join in cosponsoring, will be dealt with in the Senate on a favorable basis. I believe it will be agreed to, and it is my hope that this will be done today.").

65. *See id.* at 19, 22 (describing how Senate discussion and debate focused on the changes between the House bill and the Senate bill).

66. *See id.* at 29–30.

67. *Id.* at 34.

68. *Id.* at 17, 35.

mitted over to the Senate.[69] Although the words "strict," "joint," and "several" were not found within the final bill (thanks to the Senate drafting process), the Senate drafters did point to Section 311 of the Clean Water Act as evidence of strict liability. The Senate drafters reasoned that under common law, hazardous waste disposal constituted an ultrahazardous activity subject to strict liability.[70] This intent seems to have been endorsed by the case law establishing CERCLA precedent over the following ten years.[71]

B. The 2020s

The costs of climate adaptation will add up in the short and long term. Over just the next two decades, coastal communities on both sides of the United States will likely have to spend more than $400 billion to deal with unavoidable sea-level rise.[72] Over that time, fourteen states in particular will see expenses of $10 billion or greater.[73] Internationally, over one hundred countries will face at least $1 billion in costs.[74] In the United States, the construction of more than 50,000 miles of coastal barriers, a popular adaptation structure, in twenty-two states will make the cost of just one important climate adaptation rival the price tag for the original interstate highway system.[75]

Looking specifically at coastal adaptation to account for sea-level rise as the emblematic example,[76] the estimated costs are significant and widespread. More than fifty percent of the United States population resides in areas that will need to invest to adapt to rising seas.[77] Adaptation strategies for municipalities facing the threat of sea-level rise have been consistently classified by the

69. J.P. Sean Maloney, *A Legislative History of Liability Under CERCLA*, 16 SETON HALL LEGIS. J. 517, 541 (1992).

70. *Id.*

71. Lewis M. Barr, *CERCLA Made Simple: An Analysis of the Cases Under the Comprehensive Environmental Response, Compensation and Liability Act of 1980,* 45 BUS. LAW. 923, 976–77 (1990).

72. Sverre LeRoy & Richard Wiles, *High Tide Tax,* CTR. FOR CLIMATE INTEGRITY (June 2019), https://perma.cc/G8MD-4E7U.

73. *Id.*

74. *Id.*

75. *Id.*

76. Sea-level rise presents perhaps the most tangible climate effect that humans can adapt to. It also is expected to account for some 60% of adaptation costs in the United States. *See* James E. Neumann et al., *Joint Effects of Storm Surge and Sea-Level Rise on US Coasts: New Economic Estimates of Impacts, Adaptation, and Benefits of Mitigation Policy*, 129 CLIMATIC CHANGE 337, 337–49 (2014).

77. *See* Sierra Woodruff et al., *Fighting the Inevitable: Infrastructure Investment and Coastal Community Adaptation to Sea Level Rise*, 34 SYS. DYNAMICS REV. 48, 48 (2018).

scientific and policy community into three categories: retreat, accommodation, and protection.[78]

"Retreat" involves changing land use policies and zoning ordinances to prohibit construction of new structures and possibly even require movement of existing structures within expanded floodplain areas.[79] In many communities, it will also necessarily include the acquisition of at-risk properties by the government through eminent domain.[80] There has been much scholarly debate (to which this piece will not add) about the merits of different retreat policies and their implications for private property owners;[81] there is no dispute, however, that the costs of retreat—transactional and otherwise—will be significant.[82]

"Accommodation" takes a middle position between retreat and protection, accepting increased flooding and implementing measures to reduce the damages caused without removing homes and businesses.[83] Some policies that fall in this category include requiring (or providing) more robust flood insurance, requiring (or incentivizing) elevation of structures, and changing building codes to improve flood performance.[84] All of these options, particularly the first two,

78. *See id.*; *see also* Susanne C. Moser et al., *Wicked Challenges at Land's End: Managing Coastal Vulnerability Under Climate Change*, 37 ANN. REV. ENV'T & RES. 51, 51–78 (2012); William H. Butler et al., *Low-Regrets Incrementalism: Land Use Planning Adaptation to Accelerating Sea Level Rise in Florida's Coastal Communities*, 36 J. PLAN. EDUC. & RSCH. 319, 319–32 (2016).

79. *See* Woodruff, *supra* note 77, at 49; *see also* Maye C. Emlein, *Rising to the Challenge: Managed Retreat and the Takings Clause in Maine's Climate Change Era*, 73 ME. L. REV. 169, 182 (2020) ("Managed retreat is the movement of 'people and assets away from risk . . . in a preplanned, coordinated way.'") (quoting Sophia Schmidt, *Considering 'Managed Retreat' as a Response to Sea Level Rise*, DEL. PUB. MEDIA (Sept. 6, 2019), https://perma.cc/4SQZ-NVGB); ANNE SIDERS, COLUM. CTR. FOR CLIMATE CHANGE L., MANAGED COASTAL RETREAT: A LEGAL HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS 1, 5–7 (2013) (setting forth a comprehensive table of retreat-oriented adaptation tools, including, among others, "downzoning," "building and rebuilding restrictions," "condemnation," and "buyouts").

80. *See* Emlein, *supra* note 79 at 182; Eli Keene, *Resources for Relocation: In Search of a Coherent Federal Policy on Resettling Climate-Vulnerable Communities*, 48 TEX. ENV'T L. J. 119, 147–48 (2018) (explaining that the number of communities needing to relocate is growing and will continue to do so, emphasizing the need for federal funding to compensate the displaced and provide for relocation).

81. *See, e.g.*, Jeremy Patashnik, *The Trolley Problem of Climate Change: Should Governments Face Takings Liability if Adaptive Strategies Cause Property Damage*, 119 COLUM. L. REV. 1273 (2019); John Lovett, *Moving to Higher Ground: Protecting and Relocating Communities in Response to Climate Change*, 42 VT. L. REV. 25 (2017); Michael Allen Wolf, *Strategies for Making Sea-Level Rise Adaptation Tools 'Takings Proof'*, 28 J. LAND USE 157 (2013); Hyo Kim & Caroline A. Karp, *When Retreat is the Better Part of Valor: A Legal Analysis of Strategies to Motivate Retreat from the Shore*, 5 SEA GRANT L. & POL'Y J. 169 (2012).

82. *See, e.g.*, Woodruff et al., *supra* note 77, at 51 (noting the "high and immediate opportunity costs of foregone development").

83. *Id.* at 49.

84. *Id.* at 51.

will prove costly to existing property owners. Indeed, the growing expense of flood insurance in the United States in the face of climate change has been the subject of much scholarly attention.[85] By some estimates, thanks in large part to climate risk, the exposure of the United States government as an insurer could be as much as seven trillion dollars over the next seventy-five years.[86]

"Protection" involves the construction of infrastructure—such as seawalls, levees, dikes, and sand dunes—to protect existing residential and commercial structures in at-risk areas.[87] This is the most frequently discussed adaptation strategy across all climate effects. It is relatively straightforward and is a technique that society has employed for centuries (e.g., the Netherlands).[88] This history, coupled with the ability to document and project costs of protection infrastructure, makes seawalls and similar projects the most frequently included in adaptation cost estimates.[89]

As between these options, the price tag, and resultant policy strategy, will differ by geographic location. Political constraints may make the least-cost solution nonetheless untenable. Indeed, one study comparing the economic efficiency of retreat and protection in Northeast England found retreat to be less

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85. *See, e.g.*, REBECCA ELLIOTT, UNDERWATER: LOSS, FLOOD INSURANCE, AND THE MORAL ECONOMY OF CLIMATE CHANGE IN THE UNITED STATES (2021); Scott Gabriel Knowles & Howard C. Kunreuther, *Troubled Waters: The National Flood Insurance Program in Historical Perspective,* 26 J. POL'Y HIST. 327, 328 (2014) ("The NFIP [(National Flood Insurance Program)] has grown rapidly in the past forty years; as of December 2012 it had sold more than 5.5 million policies in twenty thousand communities and provided more than $1.28 trillion in coverage. Insurance tends to be concentrated in coastal states, with Florida and Texas alone comprising nearly 40 percent of the entire program (in number of policies, premiums, and coverage). Looking ahead, a 2013 study for the Federal Emergency Management Agency (FEMA) predicts 80 percent growth in NFIP policies written by the year 2100; the study speculates that 30% of the estimated increase in policies is due to population growth and approximately 70% is due to climate change.") (internal quotation omitted).

86. Erwann Michel-Kerjan & Howard Kunreuther, *Redesigning Flood Insurance*, 33 SCI. 408, 408 (2011).

87. Woodruff et al., *supra* note 77, at 51.

88. *See* Michael Kimmelman, *The Dutch Have Solutions to Rising Seas. The World Is Watching*, N.Y. TIMES (June 15, 2017), https://perma.cc/5SMN-PW5E (describing the city of Rotterdam, which sits twenty feet below current sea level and has only recently moved beyond the "centuries-old strategies of seizing territory from rivers and canals to build dams and dikes"); *see also* NAT'L ACAD. OF SCI., ENG'G, & MED., REDUCING COASTAL RISK ON THE EAST AND GULF COASTS 128 (2014) ("Until 1953, coastal protection in the Netherlands was in the hands of 2,600 local water boards, which grew out of medieval grassroots democratic organizations."); R.K. Turner et al., *A Cost–Benefit Appraisal of Coastal Managed Realignment Policy*, 17 GLOB. ENV'T CHANGE 397 (2007) (noting that "coastal defences such as sea walls have been constructed since Roman times to protect human settlements from the sea").

89. *See, e.g.*, Greg Allen, *A $4.6 Billion Plan to Storm-Proof Miami*, NPR (June 13, 2020), https://perma.cc/H25H-KXH4; Ana Fernandez, *Vulnerable to Climate Change, New York Constructs Seawall*, PHYS.ORG (Dec. 14, 2021), https://perma.cc/852C-BG7E.

costly in the long-term (twenty-five years or more).[90] Nonetheless, communities generally accept retreat only as the last option,[91] and managed retreat policies threaten to create political firestorms.[92] Thus, looking practically at the consequences of climate change, the relevant costs from a liability perspective are associated with the infrastructure necessary to accommodate and protect a coastal community. Those costs differ by community, which is one important reason why a liability scheme with room for individual damages calculations makes sense.

One study of coastal communities estimated that seven cities in the United States would face seawall construction costs greater than one billion dollars.[93] That same study included estimates for miles of seawall needed by state and the associated projected costs of construction.[94] The National Oceanic and Atmospheric Administration ("NOAA") has produced a framework for evaluating the economics of coastal adaptation infrastructure.[95] In the decade since its publication, the framework has begun to penetrate coastal community governments and thereby generated some detailed examples of how to price adaptation measures in the real world. The San Diego Regional Climate Collaborative, a partnership of local and regional agencies and groups, provides one such snapshot via a study of sea level rise adaptation strategies in 2017. That study found that optimal adaptation investments (based on cost-benefit analysis) totaled around

90. Turner et al., *supra* note 88.

91. *See* Sverre LeRoy & Richard Wiles, CTR. FOR CLIMATE INTEGRITY, HIGH TIDE TAX (2019), https://perma.cc/G8MD-4E7U (describing retreat as "the only viable option" for some small coastal communities).

92. *See* Woodruff et al., *supra* note 77 (describing observed "political and legal opposition to retreat policies") (citing William Butler et al., *Low-Regrets Incrementalism: Land Use Planning Adaptation to Accelerating Sea Level Rise in Florida's Coastal Communities*, 36 J. PLAN. EDUC. & RSCH. 319 (2016)); *see, e.g.*, Marty Graham, *IB Tries to Calm Fears of Eminent Domain,* SAN DIEGO READER (Nov. 16, 2018), https://perma.cc/745T-5C49.

93. *See* LeRoy & Wiles, *supra* note 91 (listing, in order of projected costs from high to low: Jacksonville, FL; New York, NY; Virginia Beach, VA; Marathon, FL; Fire Island, NY; Galveston, TX; and Charleston, SC).

94. *See id.*

95. *See* E. RSCH. GRP., WHAT WILL ADAPTATION COST? AN ECONOMIC FRAMEWORK FOR COASTAL COMMUNITY INFRASTRUCTURE (2013), https://perma.cc/639V-7V3H.

$11 million in Carlsbad[96] and $335 million in Del Mar,[97] demonstrating the wide variation across even geographically close communities.[98]

Larger cities on both coasts are now putting together multi-year budgets for adaptation. These projections largely rely on sea walls[99] and other protection and accommodation measures like enhanced drainage systems.[100] The budgets for this necessary work register in the billions of dollars. The Houston area expects to spend thirty billion dollars.[101] Boston, Norfolk, and Charleston each predict costs between one and three billion dollars.[102] According to Mayor de Blasio's administration, New York City will need to spend at least ten billion on a sea barrier.[103] These major cities, and other communities like them, may well find a difficult path to funding necessary planning and construction. But many more communities dot both coastlines (and the Gulf of Mexico) and lack significant property and income tax bases. From small fishing towns in coastal Maine to agricultural areas in Florida, already-strapped local governments will confront a fiscal and physical challenge that scares even the wealthiest cities.

Many communities will simply be unable to pay the bill. Confronted with the mounting costs of climate change, private and public parties have turned to the courts for relief. Thanks to the infamous *AEP*[104] and *Kivalina*[105] cases in the early part of the last decade, no federal common law cause of action remains viable, and thus the state courts have seen a flurry of activity. Through these cases, the public plaintiffs—state, tribal, and municipal governments—seek to

96. Carlsbad, California is a coastal city in northern San Diego County that sits approximately fifty-two feet above sea level and has a population around 115,000. *Feature Details: Carlsbad*, U.S. Geological Surv., https://perma.cc/7BWN-EDXN; *Quick Facts: Carlsbad City, California*, U.S. Census Bureau, https://perma.cc/Z84C-JKBF.

97. Del Mar, California is a small, coastal city in northern San Diego County that sits approximately 108 feet above sea level and has a population around 4,300. *Feature Details: Del Mar*, U.S. Geological Surv., https://perma.cc/33FC-YWU2; *Del Mar, CA*, Census Rep., https://perma.cc/LB5E-RLY7.

98. Nexus Plan. & Rsch., Comparing Sea Level Rise Adaptation Strategies in San Diego: An Application of the NOAA Economic Framework 75 (2017), https://perma.cc/G8VT-YHDL.

99. *See* Jim Morrison, *Who Will Pay for the Huge Costs of Holding Back Rising Seas?* Yale Env't 360 (Aug. 5, 2019), https://perma.cc/599D-7855 (describing a "harbor barrier" in Boston, a "series of seawalls" in Norfolk, and "a storm surge barrier and floodgates" in New York).

100. *See, e.g.*, *id.* (describing "needed drainage projects" in Charleston).

101. *Id.*

102. *See id.* ("In Boston, where many neighborhoods have been built and recently expanded in low-lying areas, an estimated $2.4 billion will be needed over the next several decades. . . . In Charleston, South Carolina, the mayor said last year that the city . . . had an estimated $2 billion in needed drainage projects. . . . In Norfolk, Virginia, the Army Corps of Engineers has recommended a $1.4 billion series of seawalls and other infrastructure.").

103. *See id.*

104. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011).

105. Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849 (9th Cir. 2012).

secure the funds necessary to adapt their communities to the reality of a changing climate.[106] The defendants—the "potentially responsible parties" in CERCLA parlance—come in large part from the fossil fuel industry (i.e., the corporations responsible for products that produce greenhouse gases).[107] As of this writing, twenty municipalities and the District of Columbia have brought such litigation, as well as six states and one trade association.[108] The common theory underlying these claims contends that the fossil fuel industry defendants knew about the dangerous climate impacts their products would cause and not only failed to inform the public, but also willfully deceived it.[109]

The claims in these climate adaptation lawsuits generally fall into three buckets—common law torts, products liability, and fraud and consumer protection. Importantly, all of these causes of action sound in state law.[110] The specific mix in the complaint of any individual public plaintiff depends almost entirely on the particularities of the jurisdiction's caselaw.[111] As the above discussion suggests, the climate impacts and necessary adaptation measures track similarly across the United States, with only the damages amounts differing.

The three basic common law torts alleged in most cases are nuisance, trespass, and negligence. This is unsurprising. Nuisance and trespass form the origins of environmental law, and negligence is in many ways the catch-all tort. Each theory has some challenges, and each embodies the "polluter pays" principle. Nuisance comes in two varieties: public and private. Public nuisance arises when the defendants' activity causes "an unreasonable interference with a right common to the general public."[112] Because these cases concern adaptation costs for public infrastructure (i.e., interference with common property), public nui-

106. *See, e.g.*, Complaint at 112–13, City of Honolulu v. Sunoco LP, No. 1CCV-20-0000380 (Haw. Cir. Ct. Mar. 9, 2020); *see also* Sokol, *supra* note 9, at 1407–09 (2020) (describing the damages alleged in various cases); Colum. L. Sch. Sabin Ctr. for Climate Change L. & Arnold & Porter Kaye Scholer LLP, *U.S. Climate Change Litigation: Common Law Claims*, Climate Change Litigation Databases, https://perma.cc/Y9RY-YK9W [hereinafter Climate Litigation Databases] (tracking all U.S. climate change common law cases).

107. *See* Climate Litigation Databases, *supra* note 106.

108. *Climate Liability Litigation: Cases Underway to Make Climate Polluters Pay*, Ctr. for Climate Change Integrity, https://perma.cc/MMW3-9VV3.

109. *See* Sokol, *supra* note 9, at 1413 (characterizing the alleged wrongdoing as "disinformation plus path-dependence" and likening it to the now infamous strategy of tobacco companies).

110. *See* Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 410 (2011) (holding that the Clean Air Act, and Environmental Protection Agency regulatory authority pursuant to it, displaced federal common law public nuisance claims against carbon-dioxide emitters based on climate harms); Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849 (9th Cir. 2012), *cert. denied*, 569 U.S. 5 (2013) (holding that *American Electric Power Co, v. Connecticut* applied equally to federal common law claims seeking damages (in addition to injunctive relief)).

111. *Compare* Commonwealth v. Exxon Mobil, No. 1984CV03333, 2021 Mass. Super. LEXIS 377 (Mass. Super. Ct. June 22, 2021) *with* Hoboken v. Exxon, HUD-L-003179-20 (N.J. Super. Ct. Sept. 2, 2020), *cert. denied*, 2023 WL3440749 (2023).

112. Restatement (Second) of Torts § 821B (1965).

sance fits best. In order to prove public nuisance, the plaintiff governments will have to demonstrate how the marketing of fossil fuels and withholding of vital information led to the climate crisis we now find ourselves in, unreasonably imposing costs on coastal communities.[113] The other tort forefather of modern environmental law—trespass—differs from nuisance in that it requires a physical intrusion on property. Specifically, trespass occurs when an actor causes a physical boundary crossing onto the property of another without consent.[114] If the intrusion causes actual harm, then the actor causing it need only have acted negligently or recklessly to be liable.[115] Here, the physical intrusions are the effects of climate change, most notably the rising seas. In order to prove trespass, the plaintiff governments will thus have to demonstrate that the defendants produced and marketed fossil fuels with the knowledge that their activities were likely to cause sea levels to intrude upon public property.[116] Finally, ordinary negligence imposes liability on actors whose unreasonable conduct causes injury to those to whom they owe a duty.[117] The focus for the negligence inquiry as it pertains to fossil fuel defendants will be the causal chain. All of these traditional common law torts theoretically fit, but each also present significant challenges of proof, particularly on the issues of intent and causation.

The second category of causes of action included in litigation seeking to impose liability for climate adaptation grew out of traditional torts and contract

113. *See, e.g.*, Complaint at ¶¶ 291–93, Hoboken v. Exxon, HUD-L-003179-20 (N.J. Super. Ct. Sept. 2, 2020, *cert. denied*, 2023 WL3440749 (2023) ("Each Fossil Fuel Company Defendant . . . has, by its conduct in manufacturing, marketing, distributing, and profiting from the sale of fossil fuels, caused adverse effects on a common right in the State of New Jersey, in Hudson County, and in the City of Hoboken. . . . The public nuisance is substantial and unreasonable and affects rights common to the public.").

114. RESTATEMENT (SECOND) OF TORTS § 329 (1965) ("A trespasser is a person who enters or remains upon land in the possession of another without a privilege to do so created by the possessor's consent or otherwise.").

115. RESTATEMENT (SECOND) OF TORTS § 165 (1965) (stating that unintentional intrusions (e.g., results of recklessness, negligence, or abnormally dangerous activities) will give rise to liability only if the intrusion causes actual harm).

116. *See, e.g.*, Complaint at ¶ 326, Hoboken v. Exxon, HUD-L-003179-20 (N.J. Super. Ct. Sept. 2, 2020, *cert. denied* 2023 WL3440749 (2023) ("Each Fossil Fuel Company Defendant, acting individually and in concert, has, by its intentional unreasonable conduct, and certainly by its reckless and wanton and willful conduct, in manufacturing, marketing, distributing, and profiting from the sale of fossil fuels, caused an entry on to the City of Hoboken's land, preventing Plaintiff from its use and enjoyment of such land.").

117. *See* RESTATEMENT (SECOND) OF TORTS § 282 (1965) (negligence is "conduct that falls below the standard established by law for the protection of others against unreasonable risk of harm"); Benjamin C. Zipursky & John C.P. Goldberg, *The Restatement (Third) and the Place of Duty in Negligence Law*, 54 VAND. L. REV. 657, 658 (2001) ("A prima facie case of negligence has four elements: duty, breach, causation, and injury. . . . Every state adheres to the four-element account, with perhaps two exceptions.").

theories as applied to the manufacture and sale of products.[118] The field that has emerged—strict products liability—includes three general causes of action: manufacturing defect, design defect, and failure to warn.[119] In the climate adaptation case, only the latter two—design defect and failure to warn—work. A product that is defective in design is one that, when manufactured to specifications, poses an unreasonable risk to an ordinary user.[120] Manufacturers are also required by law to provide warnings on products when they knew or should have known that the normal use could cause harm.[121] The fossil fuel industry put its products into the stream of commerce with full knowledge of the likelihood of climate change and the attendant harms. Consequently, under this theory of liability, the fossil fuel industry was obligated to consider reasonable alternative designs and provide adequate warnings of the consequence of using their products. In order to prove design defect, the plaintiff governments will thus have to demonstrate that the defendants failed to consider reasonable alternative designs to their products that would not have contributed as significantly to climate change.[122] That could be a challenging but not insurmountable

118. *See* Gary T. Schwartz, *New Products, Old Products, Evolving Law, Retroactive Law*, 58 N.Y.U. L. Rev. 796 (1983); Richard A. Epstein, *The Unintended Revolution in Product Liability Law*, 10 Cardozo L. Rev. 2193, 2196 (1988) (describing "the shift from traditional to modern product liability law" as "highlighted by two separate developments. The first is the rejection of freedom of contract for judicial regulation in the product liability area, and the second is the change in the definition of product defects and the affirmative defenses that have been developed under the new judicial orientation"); Vincent S. Walkowiak, *Product Liability Litigation and the Concept of Defective Goods: Reasonableness Revisited*, 44 J. Air L. & Com. 705, 707 (1979) ("Although early non-negligence products liability theory was often couched in terms of warranties, the advent of strict liability marked the decline of contract warranty as the sole basis of the cause of action.").

119. *See* Restatement (Third) of Torts: Products Liability §2 ("[A] product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design or is defective because of inadequate instructions or warnings.").

120. *See id.* (stating that a product "contains a design defect when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the reasonable alternative design renders the product not reasonably safe").

121. *See id.* (stating that a product "is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller or other distributor, or a predecessor in the commercial chain of distribution and the omission of the instructions or warnings renders the product not reasonably safe").

122. *See, e.g.*, Complaint at ¶¶ 265–67, Rhode Island v. Shell, 979 F.3d 50 (2020) (PC-2018-4716) ("Defendants knew or should have known of the climate effects inherently caused by the normal use and operation of their fossil fuel products. . . . Defendants . . . breached their duty of care by . . . failing to take actions including, but not limited to, pursuing and adopting known, practical, and available technologies, energy sources, and business practices that would have mitigated greenhouse gas pollution.").

task. To prove a failure to warn theory, the plaintiff governments will have to demonstrate that at least some of the risks of climate change could have been avoided had the fossil fuel defendants warned consumers of the known potential for global climate change from continued normal use of their products.[123] As described herein (and in more detail in litigation documents), there is compelling evidence that fossil fuel companies did precisely the opposite—deflecting attention and deceiving the public.[124]

A number of states have consumer protection statutes that provide private and/or public causes of action.[125] So-called "climate fraud" claims rely on these statutes to attempt to hold fossil fuel companies and their trade associations liable for misleading and deceptive marketing and promotion of fossil fuels. The same statutes provided the basis for some of the most successful tobacco litigation in the 1990s,[126] as well as the recent wave of opioid litigation.[127] Massachusetts has a representatively potent version of such statutes[128] and a piece of climate litigation relying on it.[129] The Massachusetts statute declares unlawful "[u]nfair methods of competition and unfair or deceptive acts or practices in the

123. *See, e.g.*, *id.* ¶¶ 276–77 ("Defendants knew or should have known, based on information passed to them from their internal research divisions and affiliates and/or from the international scientific community, that the climate effects described herein rendered their fossil fuel products dangerous, or likely to be dangerous, when used as intended. . . . Defendants breached their duty of care by failing to adequately warn any consumers or any other party of the climate effects that inevitably flow from the intended use of their fossil fuel products.").

124. *See, e.g.*, Mobil, *When Facts Don't Square with the Theory, Throw Out the Facts*, N.Y. TIMES, Aug. 14, 1997, at A31; *1996 American Petroleum Institute book "Reinventing Energy"*, CLIMATEFILES, https://perma.cc/S5GK-AQDN; *see also* NAOMI ORESKES & ERIK M. CONWAY, MERCHANTS OF DOUBT 35 (2010) (detailing how Exxon and API funded work by Fred Seitz and Fred Singer attempted to undermine the scientific evidence linking anthropogenic greenhouse gas emissions to global warming).

125. *See generally* CAROLYN CARTER, NAT'L CONSUMER LAW CTR., CONSUMER PROTECTION IN THE STATES: A 50-STATE EVALUATION OF UNFAIR AND DECEPTIVE PRACTICES LAWS (2018).

126. *See* Robert L. Rabin, *The Tobacco Litigation: A Tentative Assessment*, 51 DEPAUL L. REV. 331, 337 (2002) (describing the states' ultimately successful legal theories as based on consumer protection laws); Gary L. Wilson & Jason A. Gillmer, *Minnesota's Tobacco Case: Recovering Damages Without Individual Proof of Reliance Under Minnesota's Consumer Protection Statutes*, 25 WM. MITCHELL L. REV. 567, 571–72 (1999) (describing the strategy as applied in Minnesota); *see also Master Settlement Agreement between States and Tobacco Manufacturers*, Tobacco Litigation, STATE OF CAL. DEP'T OF JUSTICE, https://perma.cc/X8HG-TMJ9 (detailing the terms of a settlement between fifty-two states and territories and over forty tobacco companies in response to the consumer protection lawsuits).

127. *See* Stephen Piepgrass, et al., *State AG Cooperation on Opioids: A Model for Protecting Consumers*, REUTERS (Feb. 17, 2022), https://perma.cc/BJQ5-URVR; *see also Climate Liability Litigation: Cases Underway to Make Climate Polluters Pay*, *supra* note 108.

128. MASS. GEN. LAWS ch. 93A.

129. *See* Commonwealth v. Exxon Mobil, No. 1984CV03333, 2021 Mass. Super. LEXIS 377 (Super. Ct. Mass June 22, 2021).

conduct of any trade or commerce."[130] It goes on to provide both public (via the state attorney general)[131] and private[132] causes of action. The currently pending case in Massachusetts falls into the former category; in October 2019, Attorney General Maura Healey filed a complaint against ExxonMobil alleging, among other things, violations of Chapter 93A.[133] The violations of Massachusetts law, similar to violations alleged in other states with such laws, depend on allegations of material misrepresentations and omissions about the climate change risks posed by fossil fuel products.[134] The existence of misrepresentations and omissions has been well-documented at this point;[135] hence, it is the *materiality*[136] of these actions that may ultimately decide the fate of the consumer protection claims in Massachusetts and elsewhere.[137]

II. The Inefficiency of the Tort Solution

Torts (and related state law causes of action) provide an imperfect and inefficient solution to the problem of how to allocate the costs of climate adaptation. Many of the same uncertainties that pervaded the problem of addressing hazardous waste cleanup costs through common law torts plague the climate situation as well.

A. The Fate of Pending Adaptation Torts Cases

As mentioned above, states and municipalities are actively pursuing litigation in state courts to recover the costs of climate adaptation. These cases will all proceed on their timelines and have the potential to reach differing results.[138]

130. Mass. Gen. Laws ch. 93A, § 2.

131. Mass. Gen. Laws ch. 93A, § 4.

132. Mass. Gen. Laws ch. 93, § 9.

133. Press Release, Office of the Attorney General, AG Healey Sues Exxon for Deceiving Massachusetts Consumers and Investors (Oct. 24, 2019), https://perma.cc/HUM7-3WYN.

134. *See* Amended Complaint at ¶¶ 265, 463, 592, Commonwealth v. Exxon Mobil, No. 1984CV03333, 2021 Mass. Super. LEXIS 377 (Mass. Super. Ct. June 22, 2021) (describing the materiality of misrepresentations and omissions to investors and consumers).

135. *See, e.g.*, Neela Banerjee et al., Exxon: The Road Not Taken (2015).

136. *Material*, Black's Law Dictionary (11th ed. 2019) (Black's Law dictionary defines "material" as, in pertinent part, "[o]f such a nature that knowledge of the item would affect a person's decision-making; significant; essential.").

137. The argument that making corporations liable for statements (advertisements or attempts to influence policy) violates the First Amendment to the United States Constitution is beyond the scope of this work. *See* Citizens United v. Fed. Election Comm'n, 558 U.S. 310 (2010) for the fundamental discussion of the free speech rights of corporations.

138. *See* BP P.L.C. v. Mayor & City Council of Baltimore, 141 S. Ct. 1532, 1543 (2021) ("The Fourth Circuit erred in holding that it was powerless to consider all of the defendants' grounds for removal under § 1447(d). In light of that error, the defendants ask us to consider some of those additional grounds ourselves. That task, however, does not implicate the cir-

Some courts will undoubtedly dismiss some or all of these claims. Others will decide some or all of them on summary judgment. Still others may let them all proceed to a jury verdict. Due to the similar defendants across jurisdictions and the significant relief sought, even one success for the plaintiffs would have global implications. Add to that the unpredictability of jury awards, and the universal appeal of a federal statutory solution becomes clearer.

The twenty-eight currently pending cases present some unique challenges and technically carry independent probabilities of success. At the same time, they share one major obstacle, and their fates are intertwined. The cases that have proceeded the furthest to this point span the United States—from Hawai'i to Oakland, California to Massachusetts (and a few in between). The first hurdle any climate adaptation tort case inevitably confronts is avoiding removal from state to federal court.[139] Because of the holdings in *AEP*[140] and *Kivalina*,[141] if a climate tort case is sent to federal court, it is more likely it will be dismissed for failure to state a cognizable claim.[142] Those cases involved the doctrine of *displacement*, which explicitly concerns whether a federal statute, here the Clean Air Act, replaces *federal* common law. Their resolution left open the possibility that the related, but substantially different, doctrine of preemption would not apply to foreclose state law tort claims.[143] However, fossil fuel defendants argue that because of the federal interests involved in tort claims premised on global

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cuit split that we took this case to resolve and we believe the wiser course is to leave these matters for the Fourth Circuit to resolve in the first instance . . . . The judgment of the Fourth Circuit is vacated, and the case is remanded for further proceedings consistent with this opinion.").

139. Removal is the process by which a defendant can move a case pending before a state court to the federal district court in the same jurisdiction. *See* 28 U.S.C. § 1446 (outlining the general steps for removal based on subject matter jurisdiction). So-called "federal officer removal" pursuant to 28 U.S.C. § 1442 permits the removal of claims against federal officers and agencies, including some entities that contract with the United States government.

140. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011).

141. Native Vill. of Kivalina v. ExxonMobil Corp., 696 F.3d 849 (9th Cir. 2012).

142. FED. R. CIV. P. 12(b)(6).

143. Sokol, *supra* note 9, at 1414 ("[D]isplacement is a doctrine applicable only to *federal* common law. Indeed, as noted, in *AEP* the Supreme Court dismissed the federal nuisance claims on displacement grounds and indicated that the plaintiffs could refile their state claims in state court. State common law can be preempted by federal law, but, as discussed below, that is a different doctrine that has yet to be addressed in the context of climate tort claims."); Jonathan H. Adler, *Displacement and Preemption of Climate Nuisance Claims,* 17 J. L. ECON. & POL'Y 217, 221–22 (2022) ("Whether state law nuisance actions are to be preempted is a choice for Congress to make, and is a choice Congress has not yet made. Accepting that the EPA has regulatory authority over greenhouse gases, there is no legislation preempting state efforts to address the consequences of greenhouse gas emissions themselves. While other legal doctrines may constrain or complicate state common law climate nuisance claims, federal preemption should not be among them.").

climate change, such claims sound, if at all, only in federal common law.[144] This is a novel argument, but it has already borne fruit.[145] The fossil fuel defendants know that this is their best chance of success at the motion to dismiss stage. And thus, their universal strategy has been to immediately remove state court cases to federal courts in the same jurisdictions[146] and then defend against the inevitable motion to remand by the plaintiffs.[147] Federal district courts have consequently considered,[148] and continue to consider,[149] potentially dispositive jurisdictional arguments. A few circuit courts have also considered appeals on the removal issue.[150]

In the one case that the United States Supreme Court considered, *BP P.L.C. v. Mayor & City Council of Baltimore*,[151] the only issue decided pertained

144. *See, e.g.*, Notice of Removal at 3, California v. BP P.L.C. (No. C 17-06011), 2018 WL 1064293 (N.D. Cal. Oct. 20, 2017).

145. *See* City of New York v. BP P.L.C., 325 F.Supp.3d 466, 474 (S.D.N.Y. 2018). ("[T]he City alleges that its climate-change related injuries are the direct result of the *emission* of greenhouse gases from the combustion of Defendants' fossil fuels, and not the production and sale of those fossil fuels. Thus, the City ultimately seeks to hold Defendants liable for the same conduct at issue in *AEP* and *Kivalina*: greenhouse gas emissions. . . . Thus, . . . the City's claims are displaced.").

146. *See, e.g.*, Notice of Removal by Defendants Chevron Corp. and Chevron U.S.A., Inc., Baltimore v. BP., , Case 1:18-cv-02357-ELH (D. Md. Sept. 11, 2018); *see also* BP P.L.C. v. Mayor & City Council of Baltimore, 141 S. Ct. 1532, 1536 (2021) ("Three years ago, Baltimore's mayor and city council (we refer to them collectively as the City) filed suit in Maryland state court. The City's complaint included a number of state-law causes of action, but most centered on the defendants' alleged failure to warn about the dangers of their products—and the injuries the City says it suffered as a result. Soon after the City filed suit, the defendants removed the case to federal court.").

147. *See, e.g.*, Mayor and City Council of Baltimore's Motion to Remand, Mayor & City Council of Baltimore v. BP P.L.C., 1:18-cv-02357-ELH (D. Md. Sept. 11, 2018); *see also BP P.L.C.* ., 141 S. Ct. at 1536 ("Once the case arrived in federal court, the City filed a motion seeking to have it remanded back to state court.").

148. *See, e.g.*, City & Cnty. of Honolulu v. Sunoco LP, 1CCV-20-0000380 (Haw. Cir. Ct., Mar. 29, 2022) (order denying defendants' motion to dismiss for failure to state a claim); City of Annapolis v. BP P.L.C., 1:21-cv-00772, 2022 WL 4548226 (D. Md. Sept. 28, 2022); Anne Arundel Cnty. v. BP P.L.C., 1:21-cv-01323 (D. Md. 2022); Delaware v. BP America Inc., 1:20-cv-01429 (D. Del. 2020); Minnesota v. Am. Petroleum Inst., 0:20-cv-01636 (D. Minn. 2020); City of Hoboken v. Exxon Mobil Corp., 2:20-cv-14243 (D. N.J. 2020); City of Oakland v. BP P.L.C., 3:17-cv-06011 (N.D. Cal. 2022).

149. *See, e.g.*, City of Charleston v. Brabham Oil Co., 2:20-cv-03579 (D.S.C. 2020); Pac. Coast Fed'n of Fishermen's Ass'ns v. Chevron Corp., 3:18-cv-07477 (N.D. Cal. 2018).

150. *See, e.g.*, Rhode Island v. Shell Oil Prods. Co., 35 F.4th 44 (1st Cir. 2022); Mayor & City Council of Baltimore v. BP P.L.C., 31 F.4th 178 (4th Cir. 2022); City of Oakland v. BP P.L.C., 960 F.3d 570 (9th Cir. 2020).

151. *See BP P.L.C.*, 141 S. Ct. at 1536 ("The only question before us is one of civil procedure: Does 28 U. S. C. §1447(d) permit a court of appeals to review any issue in a district court order remanding a case to state court where the defendant premised removal in part on the federal officer removal statute, §1442, or the civil rights removal statute, §1443?").

to the scope of appeals about removal. The question decided was whether, on an appeal of a district court's remand order, a court may consider all of the potential grounds for removal. The scope of such an appeal was unsettled because most remand orders are not appealable at all.[152] By statute, remand decisions based on so-called "federal officer removal"[153] were made subject to immediate appeal.[154] The fossil fuel defendants in climate adaptation cases, including BP, raise federal officer removal as one of many purported grounds for federal jurisdiction. Thus, the district court's remand order in *Baltimore v. BP* was subject to appeal in the Fourth Circuit. The Fourth Circuit limited its consideration to the federal officer removal grounds, deciding that other grounds for removal were not properly subject to appeal.[155] The Supreme Court decided otherwise, holding that once properly on appeal thanks to the federal officer removal issue, any other issues in a remand order could also be considered.[156] Procedurally, the Supreme Court's decision means that every remand order issued by a federal district court will be fully relitigated on appeal in the corresponding circuit court. Importantly, however, the Supreme Court said nothing about how the underlying issues should be resolved. In other words, federal courts around the country remain free to determine (based on their own interpretation of existing precedent from other contexts) whether climate adaptation torts cases belong in state or federal courts.[157] A lack of uniformity on

152. *See* 28 U.S.C. §1447(d); Powerex Corp. v. Reliant Energy Servs., 551 U.S. 224, 238 (2007) ("Section 1447(d) reflects Congress's longstanding policy of not permitting interruption of the litigation of the merits of a removed case by prolonged litigation of questions of jurisdiction of the district court to which the cause is removed.") (internal quotation marks omitted).

153. *See* 28 U.S.C. § 1442 (making removable to federal court, inter alia, "a civil action . . . that is commenced in a State court and that is against or directed to . . . any officer (or any person acting under that officer) of the United States").

154. *See* 28 U.S.C. §1447(d).

155. Mayor & City Council of Baltimore v. BP P.L.C., 952 F.3d 452, 457 (4th Cir. 2020) ("Because 28 U.S.C. § 1447(d) confines our appellate jurisdiction, the narrow question before us is whether removal of this lawsuit is proper under 28 U.S.C. § 1442, commonly referred to as the federal officer removal statute. And because we conclude that § 1442 does not provide a proper basis for removal, we affirm the district court's remand order.").

156. *See BP P.L.C.*, 141 S. Ct. at 1533 ("Because it is the district court's removal order that is appealable, a court of appeals may address any issue fairly included within it.").

157. The Supreme Court did deny certiorari of the Ninth Circuit's decision in the Oakland and San Francisco cases, which effectively definitively remanded that particular case to California state court. *See* Chevron Corp. v. City of Oakland, 141 S. Ct. 2776 (2021). The Court issued no opinion in that case. One might interpret the denial itself as an endorsement of the Ninth Circuit's view on the merits (in favor of exclusive state jurisdiction), but the Court made no such pronouncement. It is perhaps equally likely that the Court will grant certiorari on another case if a circuit split develops or a case reaches resolution on the underlying claims.

this vitally important question is all but certain.[158] As is, consequently, the Supreme Court considering the actual issue.[159]

The Fourth Circuit ultimately decided that Baltimore's case belonged in state court, even after considering *all* of the purported grounds for removal.[160] The Ninth Circuit, citing the Fourth Circuit's reasoning,[161] similarly upheld remand in consolidated cases brought by the County of San Mateo, County of Santa Cruz, the City of Santa Cruz, and the City of Richmond.[162] The First Circuit followed, describing its decision rejecting various grounds for removal as "in keeping with the recent decisions of other circuit courts"[163] and "leaning hard on our sibling circuits' analyses in comparable climate-change cases."[164] The First Circuit's determination that federal courts lacked jurisdiction over climate adaptation tort claims explicitly referenced similar decisions from the Fourth, Ninth, and Tenth Circuits.[165] If the cross-references in these opinions were not enough evidence of the interconnected nature of these concurrent cases, some appeals have been formally consolidated[166] and still other dockets remain stayed explicitly pending the outcome of pending appeals.[167] The bottom line is that most of these cases are only just now restarting in state courts,

158. *Compare, e.g.*, City of New York v. B.P., 325 F. Supp. 3d 466 (S.D.N.Y. 2018) *with Mayor & City Council of Baltimore,* 952 F.3d 452.

159. Richard J. Lazarus, *The Scalia Court: Environmental Law's Wrecking Crew Within the Supreme Court*, 47 HARV. ENVTL. L. REV. 346 (2023).

160. Mayor & City Council of Baltimore v. BP P.L.C., 31 F.4th 178, 194–95 (4th Cir. 2022) ("This appeal returns to us on remand from the Supreme Court, and we are now tasked with examining the entirety of the district court's remand order to determine if the climate-change lawsuit in question was properly removed to federal court . . . To accomplish that charge, we must evaluate eight distinct grounds for removal . . . Because we conclude that none of Defendants' bases for removal permit the exercise of federal jurisdiction, we affirm the district court's remand order.").

161. *See* Cnty. of San Mateo v. Chevron Corp., 32 F.4th 733, 753–54 (9th Cir. 2022) (citing *Mayor & City Council of Baltimore*, 31 F.4th at 220).

162. Cnty. of San Mateo v. Chevron Corp., 32 F.4th 733, 745 (9th Cir. 2022).

163. Rhode Island v. Shell Oil Prods. Co., 35 F.4th 44, 54 (1st Cir. 2022).

164. *Id.* at 50.

165. *See id.* (citing *Cnty. of San Mateo*, 32 F.4th at 733; *Mayor & City Council of Baltimore*, 31 F.4th at 178; Board of Cnty. Comm'rs. of Boulder Cnty. v. Suncor Energy (U.S.A.) Inc., 25 F.4th 1238 (10th Cir. 2022)).

166. For example, the Third Circuit set oral argument on the merits of appeals in Delaware and City of Hoboken cases to be heard together on June 21, 2022. *See* Colum. L. Sch. Sabin Ctr. for Climate Change L. & Arnold & Porter Kaye Scholer LLP, *City of Hoboken v. Exxon Mobil Corp.*, CLIMATE CHANGE LITIGATION DATABASES, https://perma.cc/48DQ-WJ6J.

167. *See, e.g.*, City of Charleston v. Brabham Oil Co., No. 2:20-cv-03579 (D.S.C. May 27, 2021) (order granting stay) ("After review of the parties' joint stipulation, the Court hereby stays further proceedings in this case pending the Fourth Circuit's decision on remand from the Supreme Court in [*Baltimore v. BP*]. Within 14 days of the Fourth Circuit's decision on remand, the parties shall file a joint submission outlining the parties' positions on the next steps in this case.").

years after they were initially filed. Only in Hawai'i[168] and Massachusetts[169] have judges begun to grapple with more substantive grounds for dismissal advanced by the defendants' pre-trial motions. The road from such motions to discovery and ultimately trial lies uncharted but will no doubt prove long, arduous, and expensive.

From the plaintiffs', and civil society's, perspective, a federal statutory cause of action would provide similar advantages, vis-à-vis the torts system, as CERCLA did in 1980. Like CERCLA before it, CARLA would impose at least some form of strict liability and dictate how to divide (or not) that liability amongst responsible parties. It would also likely impose that liability retroactively against fossil fuel corporations who may no longer be producing or marketing. CERCLA provided some much-needed clarity on these questions in an area where the real-world problems pervaded,[170] but the existing theories of liability were largely untested.[171] By the early 1980s, there was no question that contaminated toxic sites dotted the landscape, imposing real risks on communities ill-equipped to protect citizens against them. The only question was who would pay to clean those sites up. Congress made the answer to that question more straightforward all across the United States by passing CERCLA. Since its inception, CERCLA has led to the identification and initiation of cleanup activities at almost 2,000 national priority list sites.[172]

Now, in the 2020s, there is similarly little question that climate change imposes real risks on communities similarly ill-equipped to protect against them.[173] Americans again find themselves asking who will pay for the necessary protections. Congress has the opportunity to respond as it did four decades ago and create a comprehensive statutory liability scheme to answer that important question. The alternative is waiting years for piecemeal litigation to work its way through state court systems around the country, potentially reaching disparate results, while communities take on debt to finance necessary adaptation infrastructure (or worse, decline to build it at all) without any assurance that funds will be recovered from any of the corporations responsible for the climate crisis.

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168. *See* City & Cnty. of Honolulu v. Sunoco LP, 1CCV-20-0000380, at *2 (Haw. First Cir. Ct., Mar. 29, 2022) (order denying defendants' motion to dismiss).

169. *See* Commonwealth v. Exxon Mobil Corp., 489 Mass. 724, 725 (2022) (upholding denial of defendants' anti-SLAPP motion, which sought to dismiss the case pursuant to MASS. ANN. LAWS ch. 231, § 59(h), holding that the statute does not apply to enforcement actions by the Attorney General).

170. *See supra* Part I.

171. *See supra* Part I.

172. *See Search for Superfund Sites Where You Live: National Priorities List and Superfund Alternative Approach Sites*, EPA (Feb. 24, 2023), https://perma.cc/A7T4-XNFY.

173. *See supra* note 12.

B. Causation and Adaptation Damages Calculations

Accountability[174] and attribution[175] science have made the causation element of the above-described tort causes of action, and the damages portion of CARLA liability, possible to prove. Accountability work seeks to trace historical greenhouse gas emissions to specific industries and companies, ultimately providing a quantitative assessment of relative culpability for the current state of the crisis. Attribution work seeks to causally connect specific impacts and events to anthropogenic climate change.[176] These two pieces of the puzzle are essential to proving causation in any climate adaptation tort case. Plaintiffs will have to convincingly establish that (1) defendant fossil fuel corporations caused climate change (i.e., accountability) and (2) climate change concretely injured plaintiff communities (i.e., attribution).

On the first question, a number of recent studies could help. In 2014, Richard Heede published a groundbreaking study tracing two-thirds of cumulative greenhouse gas emissions from the Industrial Revolution forward to the largest ninety fossil fuel and cement producers.[177] The study also found that of those two-thirds of cumulative emissions, about half came after 1986.[178] Accompanying that study, Dr. Heede published the Carbon Majors Database,[179] which gave birth to subsequent Carbon Majors Reports.[180] The 2017 Carbon Majors Report updated the findings, tracing over half of global industrial greenhouse gas emissions since 1988 to just twenty-five producers[181] and over

174. *See, e.g.*, Rachel Licker et al., *Attributing Ocean Acidification to Major Carbon Producers*, 14 ENV'T RSCH. LETTERS 124060 (2019), https://perma.cc/T96C-NDBM; RICHARD HEEDE, ACCOUNTING FOR CARBON AND METHANE EMISSIONS 1854–2010 METHODS & RESULTS REPORT (2019).

175. *See* Michael Burger et al., *The Law and Science of Climate Change Attribution*, 45 COLUM. J. ENV'T L. 57, 65 (2020) ("[T]he existing body of detection and attribution research is now quite large and the findings are sufficiently robust to support a wide variety of applications, including many of the policy, planning, and legal functions."); *see, e.g.*, Renee Cho, *Attribution Science: Linking Climate Change to Extreme Weather*, COLUM. CLIMATE SCH.: STATE OF THE PLANET (Oct. 4, 2021), https://perma.cc/AL8N-XC6H.

176. *See* Burger et al., *supra* note 175, at 68 (defining "impact attribution" as the scientific effort to link specific changes in human and natural systems to anthropogenic changes in the global climate system).

177. *See* Richard Heede, *Tracing Anthropogenic Carbon Dioxide and Methane Emissions from Fossil Fuel and Cement Producers, 1854–2010*, 122 CLIMATIC CHANGE 229, 241 (2014); *see also* HEEDE, *supra* note 174, at 8–9.

178. *See* Heede, *supra* note 177.

179. *See id.* (dubbing the ninety producers "carbon majors"); *Carbon Majors*, CLIMATE ACCOUNTABILITY INST., https://perma.cc/EA28-HZEB.

180. *See, e.g.*, PAUL GRIFFIN ET AL., THE CARBON MAJORS DATABASE: CDP CARBON MAJORS REPORT 2017 (2017), https://perma.cc/TDB6-KW2Z.

181. *See id.*

seventy percent of emissions to one hundred producers.[182] Others have built upon this formidable work, producing models that tie the emissions apportionments to percentages of fault for rising temperatures and seas. One such study from 2017 found that emissions from the ninety carbon majors accounted for between 42–50% of the rise in global mean surface temperature and 26–32% of the rise in global sea level since 1880.[183] The study further found that from 1980 onward, those producers accounted for 29–35% of the rise in temperature, and 11–14% of the rise in sea level.[184] Those are remarkably precise levels of fault, even for an ordinary torts case. How to inform a jury tasked with apportioning responsibility between multiple defendants has long been a subject of debate,[185] with less precise calculations routinely admitted as evidence. Nonetheless, accountability science is still a niche and nascent field, and no court has yet had the opportunity to consider the specific studies mentioned here.

After establishing that fossil fuel defendants bear a cognizable level of culpability for climate change itself, plaintiffs have to complete the causal chain by linking their specific injuries to climate change (rather than some other cause unrelated to defendants' conduct). Causation is a tricky thing, and torts scholars love to debate its boundaries.[186] Toxic torts cases infamously pose thorny problems of proof on the matter.[187] Climate change torts, even those narrowly focused on adaptation, face a similar challenge. As Michael Burger, Jessica Wentz, and Radley Horton aptly describe it: "[t]he most fundamental challenge is that, as research moves further down the causal chain from human influence on climate change to discrete impacts on human and natural systems, researchers must account for an increasing number of non-climate and exogenous variables."[188] Even the Intergovernmental Panel on Climate Change ("IPCC") has acknowledged the difficulty in separating the impacts of anthropogenic climate

182. *Id.* at 7.

183. *See* Brenda Ekwurzel et al., *The Rise in Atmospheric CO2, Surface Temperature, and Sea Level from Emissions Traced to Major Carbon Producers*, 144 CLIMATIC CHANGE 579, 579 (2017).

184. *See id.*

185. *See, e.g.*, Joseph Sanders, *Apportionment and Proof in Toxic Injury Cases*, 10 KAN. J.L. & PUB. POL'Y 200 (2000); RESTATEMENT (SECOND) OF TORTS § 50 cmt. J (1965).

186. *See, e.g.*, Richard W. Wright, *Causation in Tort Law*, 73 CAL. L. REV. 1737, 1737 (1985) ("In all of tort law, there is no concept which has been as pervasive and yet elusive as the causation requirement, which relieves a defendant of liability if his tortious conduct was not a cause of the plaintiff's injury. Although described by no less an authority than William Prosser as one of the 'simplest and most obvious' problems in determining tort liability, the causation requirement has resisted all efforts to reduce it to a useful, comprehensive formula and has been the subject of widely divergent views concerning its nature, content, scope, and significance.").

187. *See generally* JONATHAN HARR, A CIVIL ACTION (1995).

188. Burger et al., *supra* note 175, at 111–12.

change[189] on coastal communities from other anthropogenic impacts, like land use changes.[190] Put in simpler terms, defendants can point to a number of possible independent causes for impacts such as increased flooding or decreased fish landings.

Notwithstanding that difficulty of proof in a courtroom, science has continued to advance. Recent studies demonstrate, with increasing confidence, that climate change causes injury to coastal communities,[191] and then those studies attempt to quantify the injury.[192] Those injuries lead to health, social, and economic damages, including the infrastructure and property changes discussed above, decreases in productivity, and scarcity of food.[193] Tabulating the damages will involve large-scale accounting, but not necessarily advanced scientific modeling. The science comes in when lawyers need to connect the damages to the root cause. On that front, the most recent IPCC report made major strides in attributing specific extreme weather events to climate change.[194] Annual reports from the Bulletin of the American Meteorological Society include the most recent studies attempting to connect specific negative effects and events (e.g., flooding, drought, extreme precipitation) to anthropogenic climate change.[195] One included study, for example, found that the probability of a roughly half meter flood in Miami had increased by more than 500% since 1994 due to

189. IPCC, Climate Change 2014: Synthesis Report 124 (Rajendra K. Pachauri & Leo Meyer eds., 2014) (IPCC AR5 definition of "impacts": "In this report, the term impacts is used primarily to refer to the effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts and sea level rise, are a subset of impacts called physical impacts.").

190. *See id.* at 122 (citing IPCC, Working Group II Contribution To The Fifth Assessment Report Of The IPCC, Climate Change 2014: Impacts, Adaptation, And Vulnerability 364 (Fields et al. eds., 2014)).

191. *See* Burger et al., *supra* note 175, at 120. ("Findings from recent coastal impact studies suggest that some coastal areas are already undergoing dramatic transformations driven primarily by sea level rise.").

192. *See supra* Part II.B for discussion of the costs of adaptation.

193. *See supra* Part II.B (describing these costs for communities and countries and arguing that their quantification will be particularly challenging).

194. *See* Sonia I. Seneviratne et al., *Changes in Climate Extremes and their Impacts on the Natural Physical Environment*, *in* Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Rep. of Working Grps. I and II of the Intergovernmental Panel on Climate Change (IPCC) 109–230 (2012).

195. *Explaining Extreme Events from a Climate Perspective*, Bull. Am. Meteorological Soc'y, https://perma.cc/VAZ4-GFQJ.

climate-induced sea-level rise.[196] While the study itself does not complete the causal chain,[197] an enterprising lawyer could combine these findings with those above regarding fossil fuel corporations' contributions to sea-level rise to hold defendants accountable for a significant portion of the increased flood risk.[198] Over the past few years, the confidence expressed in those studies has steadily improved.[199] Perhaps foreshadowing the treatment of this kind of modeling as evidence of liability in court, insurance actuaries have recently started embracing climate attribution as an important part of risk modeling.[200] Actuarial models that can attribute granular risk to specific factors (e.g., sea-level rise caused by anthropogenic climate change) and then price that risk could help ease the causal proof burden for plaintiffs.

This nascent science remains relatively untested before a judge or jury.[201] A statutory scheme would alleviate the need to rely on this evidence for causation. Instead, accountability and attribution studies, along with associated location-specific expert analysis, would only be necessary to inform the total damages calculation and efforts to apportion them. Importantly, the burden of proof on the complicated question of divisibility would reside with CARLA defend-

196. *See* William V. Sweet et al., *In Tide's Way: Southeast Florida's September 2015 Sunny-Day Flood*, 97(12) BULL. AM. METEOROLOGICAL SOC'Y S25–S30 (2016).

197. *See* Burger et al., *supra* note 175, at 120–21 (admitting that this study is "compelling," but arguing that it is limited by its failure to connect the sea level rise to anthropogenic causes and estimate economic damages).

198. The high-end figure is based on carbon majors being responsible for 32% of sea level rise, and the low-end figure is based on carbon majors being responsible for 11% of sea level rise. *See supra* note 183 and accompanying text.

199. *See* Jordis S. Tradowsky et al., *Toward Near-Real-Time Attribution of Extreme Weather Events in Aotearoa New Zealand*, 103(3) BULL. AM. METEOROLOGICAL SOC'Y. S105–S110 (Stephanie C. Herring ed., 2022). ("The science of extreme weather event (EWE) attribution has developed rapidly since [2003] . . . Since then, motivated by public and media interest in whether, and to what degree, climate change affects the severity and frequency of these events, significant advances have been made in providing attribution statements in near-real time").

200. *See* Rebecca Owen, *Actuaries are Paying Attention to Climate Data*, 100 BULL. AM. METEOROLOGICAL SOC'Y, S5, S7 (2019) ("The Society of Actuaries has also established a Climate Index Working Group that produced a technical report entitled 'Determining the impact of climate change on insurance risk and the global community Phase 1: Key Climate Indicators.'"). The Society of Actuaries members from Canada and the United States are spearheading that effort. *See Determining the Impact of Climate Change on Insurance Risk and the Global Community Phase 1: Key Climate Indicators*, SOC'Y OF ACTUARIES, https://perma.cc/F5HA-HQK2.

201. Novel science is not always readily accepted by courts who are increasingly skeptical in a world of much more readily available scientific publication. *Accord* Wendy S. Neal, General Elec. Co. v. Joiner: *The Future of Scientific Evidence in Toxic Tort Litigation*, 67 U. CIN. L. REV. 881, 881 (1999) ("Since the first recorded use of an expert witness in 1782, the role of science and technology in litigation has presented extraordinary challenges to the American judicial system.").

ants,[202] incentivizing more private funding for these important branches of climate science.

CARLA would provide consistency amongst all this uncertainty. The fossil fuel corporations, which remain tremendously well resourced,[203] have tried, and thus far failed, to shield themselves from tort liability entirely through federal statute.[204] These entities could conceivably compromise on a piece of legislation that concedes some limited amount of liability in exchange for preempting state court tort litigation. They might well prefer, from a business and public relations standpoint, to deal with a known liability risk through a streamlined federal statutory remedy than a plethora of unknown disparate liability risks across many jurisdictions.

III. The Political and Policy Case for a Statutory Remedy

Parallels between the present and the early 1980s exist with respect to the torts' uncertainty and the thorniness of responding to widespread environmental impacts. Those parallels counsel for another legislative response. A legislative response requires the *legislature*, a group of elected politicians, which makes a comparative assessment of the political climates essential to completing the case for CARLA.

Unfortunately, it is indisputable that Congress is more polarized now than it was in 1980.[205] That is not a good sign for CARLA. Recall that CERCLA became law during a lame duck session of Congress.[206] As the above story recalls, the road from President Carter's pledge after the Love Canal disaster to CERCLA's passage was not an easy one.[207] Thus, even in a more moderate time, when environmentalism was less often a partisan issue,[208] a liability-based solution to clean up the country needed some help to get across the finish line. There is consequently plenty of reason to believe that in today's politics a new liability scheme to address even the tangible *effects* (not the causes) of climate

202. *See infra* Part IV.

203. *See* Matthew Taylor & Jillian Ambrose, *Revealed: Big Oil's Profits Since 1990 Total Nearly $2tn*, The Guardian (Feb. 12, 2020), https://perma.cc/2XC7-TPMH ("BP, Shell, Chevron and Exxon have made almost $2tn in profits in the past three decades as their exploitation of oil, gas and coal reserves has driven the planet to the brink of climate breakdown.").

204. *See infra* Part III.

205. *See* Drew Desilver, *The Polarization in Today's Congress Has Roots That Go Back Decades*, Pew Rsch. Ctr. (Mar. 10, 2022), https://perma.cc/2N9W-U4JZ (describing "a Pew Research Center analysis [that] finds that, on average, Democrats and Republicans are farther apart ideologically today than at any time in the past 50 years").

206. *See supra* Part I.

207. *See supra* Part I.

208. *See* Kate Richard, *Environmentalism's Less-Partisan Past*, Yale Program on Climate Change Commc'n (Oct. 23, 2017), https://perma.cc/YW8F-97JY (identifying the early 1990s as when the two major political parties began a sharper separation on environmental issues).

change would struggle to gain support. Some recent signs specific to this endeavor do nonetheless provide a glimmer of optimism, which is worth illuminating here.

Both Democrats and Republicans have proposed legislation in response, at least in part, to the growing body of adaptation torts cases in the states. The Republican-led effort unsurprisingly sought to immunize fossil fuel corporations from liability. In the midst of the COVID-19 pandemic, some republican lawmakers proposed an amendment to the relief bill that would have given the "energy" sector liability protections as one of the nation's "lifeline functions."[209] The provision did not gain traction and never made it into law, though similar provisions continue to be the subject of study and debate.[210] On the other side of the aisle, a group of democratic lawmakers have pushed the Polluters Pay Climate Fund Act of 2021.[211] That legislation would impose a fee on any fossil fuel corporation responsible for at least 0.05% of the total carbon dioxide and methane gas emissions over the last twenty years and use the proceeds to create an adaptation fund, capped at $500 billion over ten years.[212] This proposal is a retroactive carbon tax by another name, rather than a true liability scheme. Indeed, the bill specifically preserves the option to concurrently pursue state court tort liability.[213] Unsurprisingly, the Polluters Pay Climate Fund Act has garnered no Republican support.[214] In between these extremes, a compromise could emerge: a CARLA that does not foreclose liability altogether but definitively sets its terms, preempting the mess of ongoing tort litigation. The liability waiver for state law torts would appeal to Republicans and corporate interests, while the ability to make polluters pay even some of the tab for adap-

209. *See Committee Discussion Draft*, *Removing Legal Barriers Relating to Cooperating with the Federal Government During The Covid-19 Response* (May 20, 2020), https://perma.cc/YN2B-LYTF (just a few days before the Senate voted on the first coronavirus stimulus package, the Senate Homeland Security and Government Affairs Committee draft added language that would provide ambiguous immunity to the energy sector); *see also* Letter from Rep. Jamie Raskin to Speaker Nancy Pelosi and Minority Leader Kevin McCarthy (May 4, 2020), https://perma.cc/5F2V-JFX5 ("[W]e urge you to categorically oppose any attempt to confer immunity on the fossil fuel industry or to limit its liability for the damages it causes to people or property.").

210. *See generally* BENJAMIN M. BARCZEWSKI, CONG. RSCH. SERV., LSB10805, CLIMATE LIABILITY SUITS: IS THERE A PATH TO FEDERAL COURT? (2022) (discussing jurisdiction stripping and protective jurisdiction as statutory options for Congress to pursue in response to these tort suits against fossil fuel producers).

211. Polluters Pay Climate Fund Act of 2021, 117th Cong. (Senate discussion draft, Aug. 4, 2021), https://perma.cc/9PB2-3C6N.

212. *See id. See generally* Senator Chris Van Hollen et al., THE POLLUTERS PAY CLIMATE FUND ACT, https://perma.cc/5RKR-ZHVT.

213. Polluters Pay Climate Fund Act of 2021, 117th Cong. § 5 (Senate discussion draft, Aug. 4, 2021), https://perma.cc/9PB2-3C6N.

214. *See* Lisa Friedman, *Democrats Seek $500 Billion in Climate Damages From Big Polluting Companies*, N.Y. TIMES (Aug. 5, 2021), https://perma.cc/JNZ2-PNF9 (listing the supporters of the bill and describing them as "all Democrats").

tation would appeal to Democrats and struggling coastal communities. Such a compromise might still prove untenable (to either or both sides), but it is likely the only way a version of CARLA passes at the federal level.[215]

Prior to CERCLA's passage, there is some evidence that state legislative action and judicial rulings favorable to the environment had left industry unsettled and fearful of liability. Those conditions may have contributed to a less robust lobbying assault against CERCLA than one might expect, and perhaps even led some to push *for* federal legislation.[216] The situation was not dissimilar to the one facing the auto manufacturing industry prior to the passage of the Clean Air Act—a myriad of state law requirements and court rulings engendering uncertainty and creating inefficiencies in production.[217] The threat of multi-billion-dollar damages awards in multiple states could very well motivate the fossil fuel industry to accept a federal statutory solution. That motivation would shift from a nudge to a shove if even one of the cases mentioned above results in an actual judgment against fossil fuel defendants. As some of those cases move closer to that possibility,[218] the pressure builds.

Torts scholarship has long recognized a number of supporting rationales for imposing liability, including the two most salient to this endeavor—the instrumentalist[219] and corrective justice theories.[220]

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215. The political viability of individual state statutes that impose liability on fossil fuel producers is a wholly different matter, at least in a subset of states where more progressive politicians possess legislative majorities. In the CERCLA context, state legislation abounds (though that effort followed the federal statute); 47 states have their own CERCLA-type statutes. *See* U.S. Gov't Accountability Off., GAO-13-633T, Hazardous Waste Cleanup: Observations on States' Role, Liabilities at DOD and Hardrock Mining Sites, and Litigation Issues (2013). Here, one might envision state CARLAs as another lever to urge uniform federal action.

216. The forestry industry had no choice but to seek federal statutory relief following the Fourth Circuit's ruling in *W. Va. Div. of the Izaak Walton League v. Butz*, 522 F.2d 945 (4th Cir. 1975) (sharply curtailing the practice of clearcutting in national forests).

217. *See* Andrew P. Morriss, *The Politics of the Clean Air Act*, *in* Political Environmentalism: Going Behind the Green Curtain 290 (Terry Lee Anderson, ed., 2000).

218. *See, e.g.*, City & Cnty. of Honolulu v. Sunoco LP, 1CCV-20-0000380 (Haw. Cir. Ct. Mar. 29, 2022) (order denying defendants' motion to dismiss for failure to state a claim).

219. *See generally* Richard A. Posner, Economic Analysis of Law 204–08 (6th ed. 2003); *see also* James A. Henderson, Jr. & Douglas A. Kysar, The Torts Process 37 (9th ed., 2017) ("With historical roots in the thought of John Stuart Mill and Jeremy Bentham, this approach was pioneered in the United States by Oliver Wendell Holmes, Jr. Today, the instrumentalist view is most closely associated with the law and economics movement. A prominent proponent of this view, scholar and Judge Richard Posner, argues that the law of battery, like all tort law, should deter persons from engaging in activities that a reasonable person would view ahead of time to be socially wasteful.").

220. *See* Benjamin C. Zipursky, *Philosophy of Tort Law*, *in* The Blackwell Guide to Philosophy of Law and Legal Theory 122 (Martin P. Golding & William A. Edmundson eds., 2004); *see also* John C. P. Goldberg & Benjamin C. Zipursky, *Torts as Wrongs*, 88 Tex. L. Rev. 917 (2010); Ronen Perry, *The Role of Retributive Justice in the Common Law of Torts: A Descriptive Theory*, 73 Tenn. L. Rev. 177 (2006); Emily Sherwin, *Compensation and Re-*

Under the former theory, the imposition of liability deters future actors from "activities that a reasonable person would view ahead of time to be socially wasteful."[221] Instrumentalists thus view the primary function of liability rules as influencing behavior, using economic incentives to do so.[222] Any moral signal or stigma associated with liability is secondary to that goal. Thus, under this theory, imposing liability on oil, coal, and gas companies to cover the costs of adaptation would make continued production of fossil fuels more expensive (perhaps prohibitively so) and consequently less prevalent (and eventually nonexistent). The market, with the liability signals in place, would shift from fossil fuels to renewable energy sources. Adaptation liability then serves the instrumental purpose of encouraging mitigation (through fuel shifting).[223] Put another way, one might view the liability scheme discussed herein as a backdoor climate mitigation effort, a way to act on climate when direct regulation of emissions seems less and less likely at the federal level.

Corrective justice theorists, on the other hand, build upon the retributive justice perspective imported from criminal law to explain why tort liability focuses on rights and wrongs. In other words, liability exists to punish wrongdoers and redistribute ill-gotten gains to their victims.[224] The ultimate goal of any liability scheme for these thinkers is fairness. The rationale applies rather straightforwardly to climate adaptation liability for fossil fuel producers, following the centuries-old environmental law trope of "polluter pays."[225] As detailed in the sections that follow, the costs of climate adaptation are already significant, and still growing. The silver lining, from a liability perspective, is that one can trace the primary cause of our climate crisis to the action (and inaction) of a single industry—fossil fuel. Corporations who make their business extracting these fuels from the earth and selling them to citizens and governments have, it turns out, known for decades that the emissions from their products would cause widespread and irreversible damages.[226] To date, they have employed

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venge, 40 SAN DIEGO L. REV. 1387 (2003); George P. Fletcher, *Fairness and Utility in Tort Theory*, 85 HARV. L. REV. 537 (1972).

221. *See* HENDERSON & KYSAR, *supra* note 219, at 37.

222. *See generally* POSNER, *supra* note 219.

223. *Id.* at 206 (explaining that the ultimate goal, from an instrumentalist perspective, is "to channel resource allocation through the market as much as possible").

224. *See* George P. Fletcher, *Fairness and Utility in Tort Theory*, 85 HARV. L. REV. 537, 542 (1972) ("Tort theorists tend to regard the existing doctrinal framework of fault and strict liability as sufficiently rich to express competing view about fairly shifting losses. This conceptual framework accounts for a number of traditional beliefs about tort law history. One of these beliefs is that the ascendancy of fault in the late nineteenth century reflected the infusion of moral sensibility into the law of torts. That new moral sensibility is expressed sometimes as the principle that wrongdoers ought to pay for their wrongs.").

225. *See, e.g.*, THE DIALOGUES OF PLATO: THE LAWS, vol. 4, book 8, section 485(e) (Jowett B trans., 4th ed. 1953) ("If anyone intentionally spoils the water of another . . . let him not only pay damages, but purify the stream or cistern which contains the water.").

226. *See generally* NEELA BANERJEE ET AL., *supra* note 135; *see also* sources cited *supra* note 124.

obfuscation and deception to prolong the industry and intensify the problem, fighting mitigation and adaptation efforts, while forcing the rest of society to pay the price of their pollution. Corrective justice theory posits that the imposition of liability would fairly redistribute and repurpose fossil fuel profits to help repair the situation the industry's wrongdoing created.

From a climate policy perspective, imposing statutory liability on upstream producers to compensate communities for the costs of adaptation makes sense when compared to other options. As the pending cases demonstrate, state court trials do not always proceed with all deliberate speed, especially not when well-resourced defendants throw up every conceivable roadblock. A federal statutory liability scheme would streamline the process, facilitating the distribution of funds to communities who are in desperate need of them due to already salient climate effects. Further, choosing fossil fuel producers, rather than individual users, as the polluters who will pay makes practical and moral sense.[227] On the practical side, it is much easier to identify and litigate or negotiate with a small group (one hundred or fewer) of corporate potentially responsible parties than an extremely large group of disparate consumers of fossil fuels (millions).[228] And, inevitably, consumers will not be totally off the hook, as producers will certainly pass on some of the costs of liability.[229] From a moral and tort theory perspective, fossil fuel producers are wrongdoers. They are not the only wrongdoers in the climate crisis; but they are the wrongdoers who acted with prior knowledge[230] and who have the most ability to pay.[231]

IV. Features of Statutory Liability

CERCLA's power has derived in large part from three distinct features of the liability it imposes. That liability is (1) strict, (2) joint and several, and (3) retroactive. CERCLA's text was neither precise nor explicit as to the application of these principles and their scope, however.[232] In the years following CERCLA's enactment, these defining fundamental features took shape via judicial interpretation of the statutory text.[233] Much of the development of the

227. *See* Burger et al., *supra* note 175, at 135.

228. *See id.*

229. *See id.*

230. *See* sources cited *supra* note 124; *see also* Burger et al., *supra* note 175, at 135 ("As an ethical matter, fossil fuel producers and energy companies have long known about the climate risks posed by use of their products, have lobbied against regulation, and ultimately profit most from the consumption of fossil fuels.").

231. *See* Mari Matsuda, *On Causation,* 100 Colum. L. Rev. 2195, 2202–12 (2000).

232. This is due in large part to the mess of a legislative process and attendant congressional record, which is detailed *supra*, Part I.

233. *See generally* William H. Frank & Timothy B. Atkeson, Superfund: Litigation and Cleanup, BNA (1985) (presenting a comprehensive overview of the emerging body of law under CERCLA, a brief description of CERCLA's major provisions and legislative history, an issue-by-issue discussion of CERCLA case law, and a table of cited cases).

workings of superfund liability came in the early years after the statute's enactment.[234] That flurry of activity provided early evidence of two things. First, Congress had succeeded in provoking a renewed effort to clean up contaminated sites and recover costs for such. Second, Congress had failed to spell out the terms of liability with sufficient legal precision. Courts managed to preserve CERCLA's power by interpreting the act in accordance with Congress's professed intention that it provide a comprehensive response to the problem of sites contaminated by hazardous substances.[235] Any comprehensive liability scheme for climate adaptation would be wise to track the defining features of CERCLA liability *and* do so even more explicitly than CERCLA initially did.

As with the difficulty of using common law tort to make polluters pay to clean up contaminated sites in the 1980s, there are several challenges—many similar, some different—in applying common law tort liability to GHG emissions. In both situations, proving causation of any one of multiple defendants could be costly, risky, and scientifically daunting. GHG emitters, like the hazardous waste dumpers before them, will likely claim a *de minimis* individual contribution. The sheer number of emitters that exist as well as attributional challenges related to damage from climate change are other common problems to finding polluters liable. This causes problems in the establishment of duty. Thus, a strict, joint and several, and retroactive liability bill for GHG emissions could help overcome challenges to traditional common law causes of action as CERCLA did. It is useful to examine closely each of these features—how they originated in CERCLA text and caselaw and how they would apply to climate adaptation liability.

A. Strict Liability

Strict liability, or liability without fault, dispenses with the plaintiff's obligation to prove intent, knowledge, or even negligence on the part of the defendant with respect to the activity or consequences in question.[236] It is generally enough to prove simply that the defendant's product (or activity) was unreasonably dangerous.[237] This makes it a powerful tool, applied sparingly under the common law to cases of product liability (i.e., defective products)[238] and "abnor-

234. *See id.* at 46–50 (covering the first four and a half years of efforts to interpret the Act).

235. *See, e.g.*, Wickland Oil Terminals v. Asarco, Inc., 792 F.2d 887, 890 (9th Cir. 1986) ("Congress enacted CERCLA in 1980 to provide a comprehensive response to the problem of hazardous substance release.").

236. *See* RESTATEMENT (SECOND) OF TORTS § 519, cmt. d (1977) ("The defendant is held liable although he has exercised the utmost care to prevent the harm to the plaintiff that has ensued.").

237. *See id.* ("The liability arises out of the abnormal danger of the activity itself, and the risk that it creates, of harm to those in the vicinity.").

238. *See id.* § 402(a) ("(1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if (a) the seller is en-

mally dangerous activities."[239] Both are categories that, not coincidentally, have relevance to the hazardous substances that contaminate CERCLA sites. By definition, CERCLA sites involve contamination from the use or disposal of hazardous or dangerous substances,[240] which could very well be considered "abnormally dangerous activity."[241]

Perhaps it was the theoretical connection to other sources of strict liability that led congress to draft CERCLA's liability provisions narrowly. Section 107 of CERCLA specifically delineates the parties potentially liable for cleanup[242] and the limited defenses available to them.[243] The four specific categories of potentially responsible parties are:

> (1) the owner and operator of a vessel or a facility,
> (2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,
> (3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances, and
> (4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities, incineration vessels or sites selected by such person, from which there is a release, or a

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gaged in the business of selling such a product, and (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.").

239. *See id.* § 519 ("One who carries on an abnormally dangerous activity is subject to liability for harm to the person, land or chattels of another resulting from the activity, although he has exercised the utmost care to prevent the harm.").

240. 42 U.S.C. § 9604(a)(1) ("Whenever (A) any hazardous substance is released or there is a substantial threat of such a release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare, the President is authorized to act, consistent with the national contingency plan, to remove or arrange for the removal of, and provide for remedial action relating to such hazardous substance, pollutant, or contaminant at any time (including its removal from any contaminated natural resource), or take any other response measure consistent with the national contingency plan which the President deems necessary to protect the public health or welfare or the environment.").

241. *See* Lynda J. Oswald, *Strict Liability of Individuals Under CERCLA: A Normative Analysis*, 20 B.C. ENV'T AFF. L. REV. 579, 600 (1993) ("[I]n the decade preceding CERCLA, a number of commentators had argued that strict liability was the appropriate standard for evaluating liability for injuries caused by environmental contamination, analogizing environmental harm to both hazardous activities and to products liability.").

242. 42 U.S.C. § 9607(a).

243. 42 U.S.C. § 9607(b).

> threatened release which causes the incurrence of response costs, of a hazardous substance . . . .[244]

Notably absent from the short list of defenses in Subsection 107(b) is any reference to care taken or knowledge of the contamination of the site in question.[245] It was in interpreting this section that courts quickly decided that CERCLA liability was strict. Courts relied on its text and the legislative history discussed above[246] to make this important conclusion. In 1984, the Central District of California held that the legislative history "[m]ake[s] it clear that traditional tort notions, such as proximate cause, do not apply."[247] Other federal district courts held similarly, often in even more definitive language.[248] The Second Circuit considered the issue on appeal and held that a CERCLA plaintiff is not required to prove that the acts of a defendant directly caused or contributed to the circumstance which required response action.[249] All of these decisions came shortly after CERCLA went into effect.

By the end of the decade, the matter was effectively settled. CERCLA liability was strict.[250] The Supreme Court seemed to agree by 1989 when it heard the case of *Pennsylvania v. Union Gas Company*, which concerned the

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244. 42 U.S.C. § 9607(a).

245. *See* 42 U.S.C. § 9607(b) (exclusively listing the following defenses:

> "(1) an act of God; (2) an act of war; (3) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant (except where the sole contractual arrangement arises from a published tariff and acceptance for carriage by a common carrier by rail), if the defendant establishes by a preponderance of the evidence that (a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions; or (4) any combination of the foregoing paragraphs.").

246. 42 U.S.C. § 9607(b). *See supra Part IV.A.*

247. United States v. Cauffman, No. CV 83-6319-KN, 15 Env't L. Rep. 20,161 (C.D. Cal. Oct. 23, 1984).

248. *See, e.g.*, United States v. Md. Bank & Trust Co., 632 F. Supp. 573, 576 (D. Md. 1986) (relying on legislative history to hold that "[s]ection 107 of CERCLA imposes strict liability" (citing S. REP. . No. 96-848, (1980)); United States v. Bliss, 667 F. Supp. 1298, 1308 (E.D. Mo. 1987) ("Under CERCLA, liability is strict, requiring no inquiry into state of mind"); *id.* at 1309 (the structure of CERCLA and its legislative history make it clear that traditional tort notions, such as proximate cause, do not apply") (citing United States v. Wade, 557 F. Supp. 1326, 1332–33 (E.D. Pa. 1983)).

249. *See* New York v. Shore Realty Corp. 759 F.2d 1032, 1051 (2d Cir. 1985).

250. *See* United States v. Marisol, Inc., 725 F. Supp. 833, 839 (M.D. Pa. 1989) ("[I]t is clear that the majority of courts who have considered the issue have held that CERCLA imposes strict liability.").

related issue of whether a state could be liable under CERCLA.[251] Although the interpretation of Section 107 was not at issue in the case, a plurality of justices remarked, without stirring debate, that "[it] is a strict-liability provision," citing some of the above-discussed cases.[252] Indeed, there has been little dispute in the many years of litigation under CERCLA since about its strict application to the four categories of potentially responsible parties.[253] Instead, defendants have chosen to argue that they, for one reason or another, do not fit into one of those Section 107(a) categories.[254] That issue then turns not on questions of causation of harm (i.e., contamination), but questions of control over the hazardous substance at some point.[255] By imposing liability on actors who handle pollutants in the stream of commerce, rather than trying to pin down which specific actor spilled which drops of pollutant, CERCLA's strict liability scheme efficiently shifts costs. Without it, players in industries that depend on hazardous substances would be able to disclaim liability by simply pointing fingers at each other. With strict liability, any industry participant is incentivized to not only avoid contaminating sites but to raise industry standards so others do not do so either.

The type of strict liability that courts have applied in CERCLA cases would work well for climate adaptation costs. Similarly, an industry has imposed the most significant environmental externality of their operations on society. As discussed above,[256] the largest fossil fuel companies have controlled the production and distribution of the primary driver of climate change. Their control over fossil fuel is like the potentially responsible parties' control over hazardous substances. In both instances, the imposition of liability without fault is key to forcing the industry as a whole to internalize the externality (i.e., to make the polluter pay).

One can make a strong theoretical case for the common law strict liability in the case of fossil fuels. After all, the production and distribution (i.e., sale) of fossil fuels presents a fairly straightforward products liability situation. Indeed, the currently pending state tort cases all include claims of product defects.[257] A statutory strict liability scheme would simply confirm that the law of products

251. *See* 491 U.S. 1, 5 (1989).

252. *Id.* at 53 n.5 (citing *Shore Realty Co.*, 759 F. 2d at 1042; *Bliss*, 667 F. Supp. at 1304).

253. *See* Oswald, *supra* note 241, at 598 ("courts uniformly agree that strict liability applies to CERCLA violations"); United States v. Monsanto Co., 858 F.2d 160, 167 (4th Cir. 1988) ("We agree with the overwhelming body of precedent that has interpreted section 107(a) as establishing a strict liability scheme.").

254. *See* 42 U.S.C. § 9607(a).

255. *See* Howard F. Chang, *Developments in the Law: Toxic Waste Litigation,* 99 HARV. L. REV. 1458, 1514 (1986) ("Courts have generally resolved ambiguity with respect to whether a particular party falls within one of the statutory definitions by inquiring into the degree of the defendant's control over some essential link in the disposal decisions.").

256. *See supra* Part II.B.

257. *See supra* Part I.B.

liability applies even when the harm caused by the defect is collectively felt—the harms in this instance being the well-documented costs of adaptation measures.[258] These costs, and even some of the specific infrastructure involved, are very similar to the costs of remediation of contaminated sites under CERCLA.

As with CERCLA, when fault drops out of CARLA's liability equation, something else needs to define the bounds of the scheme's reach. The four defined categories of CERCLA liability put an emphasis on control over hazardous substances and/or property that ultimately led to contamination.[259] In this way the statute reached back to the root of pollution problem, rather than targeting individual bad actors. A parallel scheme for climate adaptation liability would emphasize the introduction and control of the underlying substance (i.e., fossil fuels) that generates greenhouse gas pollution. A directly parallel scheme would hold liable the following[260]:

> (1) the producer or distributor of a fossil fuel,
> (2) any person who at the time of distribution of any fossil fuel owned or operated any facility at which such fossil fuels were produced or distributed,
> (3) any person who by contract, agreement, or otherwise arranged for production or distribution of fossil fuels, or arranged with a transporter for transport of fossil fuels, owned or possessed by such person, by any other party or entity, at any facility owned or operated by another party or entity and producing such fossil fuels,
> (4) any person who accepts or accepted any fossil fuels for transport to distribution facilities.

The difficulty with such a rigid scheme is that it has the potential to capture an unwieldy number of very small operators. In particular, the proposed sections (2)–(4) would impose liability on businesses of any size involved with the transportation and sale of gasoline, a category that includes a great number of sole proprietorships and family-owned businesses. Even larger fossil fuel entities would argue that, counted alone, each's contribution is *de minimis*.[261] In contrast to the defined geographic universe of a CERCLA site, any adaptation project theoretically implicates most, if not all, of the global universe of potentially responsible parties. Hence, a statutory climate liability scheme will need to use something more than geographic boundaries to identify the potentially re-

258. *See supra* Part II.B.

259. *See* 42 U.S.C. § 9607(a).

260. *See infra* Appendix A (including more complete statutory text for a CARLA Section 107).

261. *See* Jonathan Glover & M. J. Scott-Taggart, *It Makes No Difference Whether or Not I Do It*, 49 Proc. Aristotelian Soc'y, Supplementary Volumes 171, 171 (1975).

sponsible parties in a given case.[262] Fortunately, the carbon majors report and other accountability science can provide some guidance if the goal is to hold those most responsible accountable. As mentioned above, one similar piece of already proposed legislation would impose a tax on any company responsible for at least 0.05% of the total carbon dioxide and methane gas emissions over the last twenty years.[263] A liability threshold of that kind would track the carbon majors list fairly well, which would make scientific and policy sense. It would also be consistent with the approach to liability in the tobacco and opioid settlements.[264] The ability to include such a threshold in a statutory liability scheme presents a significant advantage over the current state-based tort approach. If no statutory liability scheme emerges for climate adaptation, state courts will likely resort to imprecise and inconsistent interpretations of what constitutes *de minimis* contribution absolving a defendant of liability.

The second, less common category of common law strict liability concerns abnormally dangerous activity. The movement, use, or control of hazardous substances could very well be "abnormally dangerous." But even there, tort law was reluctant to interpret that category so broadly.[265] Fossil fuel production and distribution appear more innocuous on their own than use of hazardous substances; many ordinary citizens transport propane or kerosene tanks in passenger vehicles, for instance. However, the documentation of the increasingly dangerous effects of climate change, along with the ability to more directly attribute those effects to fossil fuel activity, suggests something abnormal is afoot. There also exists precedent in the Clean Air Act for determining hazard based on chemical concentration over time, which is precisely the type of problem the accumulation of greenhouse gases presents.[266] Greenhouse gas accumulation is definitely not as clearly abnormally dangerous as some of the emblematic contamination cases like Love Canal where humans were suffering acute and significant harm resulting from exposure to certain chemicals. It is not dangerous per se to come into contact with carbon dioxide, but at scale the abnormal danger becomes apparent. In some ways, we are talking about hazards resulting from human and industrial activity. Industrial activity is often human

262. At a minimum, the fossil fuel producing entities within the state where an accountability action originates should probably have some liability. However, confining it to just those entities ignores the realities of atmospheric science and greenhouse gas emissions.

263. *See infra* Part II.B.

264. *See generally*, Master Settlement Agreement between States and Tobacco Manufacturers, Tobacco Litigation, STATE OF CAL. DEP'T OF JUSTICE, https://perma.cc/X8HG-TMJ9 (tying payments to relative market share and market capitalization); *Global Settlement Tracker*, OPIOIDSETTLEMENTTRACKER.COM (2023), https://perma.cc/XM78-8F58 (focusing on "big three pharmacies"—CVS, Walgreens, and Walmart—and "major" manufacturers and distributors).

265. *See infra* Part I.

266. *See, e.g.*, Clean Air Act § 108, 42 U.S.C. § 7408 (establishing the National Ambient Air Quality Standards program).

activity at scale. Thus, we may be able to draw a line between inherently dangerous fossil fuel production and the type of production that does not rise to that level. Again, this type of line drawing would be important for a strict climate liability scheme to function properly.

B. Joint and Several Liability

At common law, "joint and several liability" makes each of multiple defendants liable for the entirety of the plaintiff's loss, regardless of relative culpability or degrees of fault. Put another way, in the words of the Restatement, a plaintiff can "sue for and recover the full amount of recoverable damages from any [defendant]."[267] This principle prioritizes the plaintiff being made whole over any one defendant potentially overpaying relative to the harm they caused. The alternatives (i.e., liability apportioned based on fault, ability to pay, or some other metric) increase the possibility that a successful plaintiff will still be less than whole in the event of an insolvent or recalcitrant defendant. Joint and several liability also puts the burden on the wrongdoers to apportion damages amongst themselves through contribution actions, rather than forcing the innocent plaintiff to prove separate damages amounts for each defendant. Once wrongdoing has been established, when faced with a choice between tortfeasor and victim, the morally justified option places the burden on the tortfeasor.

At common law, joint and several liability attaches when two or more tortfeasors either act in concert or act independently but create an indivisible harm.[268] The first category captures actors who coordinated to harm the plaintiff and rightly holds them each fully responsible for the coordinated action. The second category addresses the concerns articulated above with respect to ensuring that a plaintiff is made whole. A relevant, albeit rare, variation on ordinary joint and several liability is what has been called "market share" liability. This rule may apply when a generic product causes an injury and there are multiple manufacturers of identical versions of that product.[269] In such circumstances, after the famous *Sindell v. Abbott Laboratories*[270] case, a court may hold defendant manufacturers proportionately liable in accordance with their market share in the market of the good.

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267. Restatement (Third) of Torts: Apportionment of Liability § 10 (2000).

268. James A. Henderson et al., The Torts Process 137 (9th ed., 2017) ("At common law, two situations in which two or more defendants acted tortiously toward the plaintiff gave rise to what is now referred to as 'joint and several liability': where the defendants acted in concert to cause the harm, and where the defendants acted independently but caused indivisible harm.").

269. *See id.* at 141–43.

270. 26 Cal.3d 588 (Cal. 1980); *see also* Hymowitz v. Eli Lilly & Co. 73 N.Y.2d 487 (N.Y. 1989).

No provision of CERCLA mandates joint and several liability in every case.[271] However, the harms CERCLA aims to address (i.e., contamination of soil and water) are by their nature frequently indivisible between the various potentially responsible parties at a particular site. Thus, most courts applied ordinary tort principles and held multiple defendants jointly and severally liable for indivisible harm.[272] Contemporary scholars generally agreed.[273] By the end of the first decade of CERCLA litigation, the Fourth Circuit aptly described the statute as permissive of joint and several liability for indivisible harm in 1988.[274] In practice, joint and several liability became the default under CERCLA.[275] The statute included no requirement that all potentially responsible parties be included in an initial action pursuant to Section 107. And, furthermore, if there was any doubt on the matter, Congress amended the statute to specifically contemplate that parties would seek contribution from one another, making such a cause of action explicit in Section 113.[276] A contribution claim embodies a "tortfeasor's right to collect from others responsible for the same tort after the tortfeasor has paid more than his or her proportionate share, the shares being determined as a percentage of fault."[277] As Justice Thomas explained in *Atlantic Research,* this traditional tort understanding of contribution applies to CERCLA liability through §113(f).[278] Such a cause of action is only necessary because Section 107 imposes joint and several liability in most instances.[279]

In response to joint and several liability emerging as the default in CERCLA cases, potentially responsible parties turned to a "divisibility of harm" defense. This defense requires the jointly and severally liable defendant to put

271. *See* United States v. Monsanto Co., 858 F.2d 160, 171 (4th Cir. 1988) ("CERCLA does not mandate the imposition of joint and several liability"); Lawrence S. Coven, *Liability Under CERCLA: After a Decade of Delegation, the Time Is Ripe for Legislative Reform,* 17 OHIO N.U. L. REV. 165, 192 (1990) (describing CERCLA as not mandating, but often naturally resulting in, joint and several liability).

272. *See e.g.*, United States v. New Castle Cnty., 642 F. Supp. 1258 (D. Del. 1986); Colorado v. ASARCO, Inc., 608 F. Supp. 1484 (D. Colo. 1985); United States v. A & F Materials Co., 578 F. Supp. 1249, 1256 (S.D. Ill. 1984).

273. *See, e.g.*, Eric P. Jorgenson, *Joint and Several Liability for Hazardous Waste Releases Under Superfund*, 68 VA. L. REV. 1157 (1982); Anita M. D'Arcy, *Joint and Several Liability Under Superfund*, 13 LOY. U. CHI. L.J. 489 (1982).

274. *See Monsanto Co.*, 858 F.2d at 171–72.

275. *See* Frank Prager, *Apportioning Liability for Cleanup Costs Under CERCLA*, 6 STAN. ENV'T L.J. 198, 198 (1986) (describing "the reality of liability under CERCLA – almost certain joint and several liability").

276. 42 U.S.C. § 9613(f).

277. United States v. Atl. Rsch. Corp., 551 U.S. 128 (2007) (quoting BLACK'S LAW DICTIONARY 353 (8th ed. 1999)).

278. *Atl. Research Corp.*, 551 U.S. at 140 n.7 ("We assume without deciding that § 107(a) provides for joint and several liability.").

279. *See id.*

forward evidence that the environmental harm at a particular site is capable of division between the various potentially responsible parties.[280] This defense unsurprisingly derives directly from the common law and the Restatement of Torts, which recognizes that multiple independent actors can cause *divisible* harm (as well as indivisible harm that provides the basis for joint and several liability).[281] The divisibility (or apportionment) defense has theoretically existed from the moment CERCLA liability was recognized as joint and several based on a theory of independent actors causing indivisible harm (i.e., comingled contamination over time).[282] Indeed, courts recognized it in toxic torts cases that predated CERCLA's passage.[283] Importantly, as the Supreme Court clarified in *Burlington Northern v. United States*, "CERCLA defendants seeking to avoid joint and several liability bear the burden of proving that a reasonable basis for apportionment exists."[284] The Court went on to articulate two points on which proof must be sufficient: (1) that the harm to the environment is capable of division and (2) that a reasonable basis to apportion damages exists.[285] In *Burlington Northern,* no dispute existed as to the first element, and so the Supreme Court only had occasion to comment on what constitutes a "reasonable basis" for the division of liability.[286] The Court upheld a division based on the specific chemicals handled by the defendant, the percentage of surface area where de-

280. *See* Lynda J. Oswald, *New Directions in Joint and Several Liability Under CERCLA*, 28 U.C. DAVIS L. REV. 299, 329 (1995) (describing the majority approach of courts to joint and several liability under CERCLA and remarking that it "turns upon the factual inquiry into whether the harm is divisible" and that "the burden of proving such divisibility rests on the defendant").

281. RESTATEMENT (SECOND) OF TORTS § 433 (1976) ("when two or more persons acting independently caus[e] a distinct or single harm for which there is a reasonable basis for division according to the contribution of each, each is subject to liability only for the portion of the total harm that he has himself caused"); WILLIAM L. PROSSER, LAW OF TORTS 313–14 (4th ed. 1971).

282. *See* Prager, *supra* note 275, at 198 (noting that the congressional record supports an interpretation of CERCLA liability for independent potentially responsible parties as apportionable according to "the traditional and evolving principles of the common law") (quoting 126 CONG. REC. 31,965 (1980)).

283. *See* Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1095 (5th Cir. 1973) ("Where several defendants are shown to have each caused some harm, the burden of proof (or burden of going forward) shifts to each defendant to show what portion of the harm he caused. If the defendants are unable to show any reasonable basis for division, they are jointly and severally liable for the total damages."); Landers v. E. Tex. Salt Water Disposal Co., 248 S.W.2d 731, 734 (Tex. 1952) ("Where the tortious acts of two or more wrongdoers join to produce an indivisible injury, that is, an injury which from its nature cannot be apportioned with reasonable certainty to the individual wrongdoers, all of the wrongdoers will be held jointly and severally liable for the entire damages and the injured party may proceed to judgment against any one separately or against all in one suit.").

284. Burlington N. & Santa Fe Ry. v. United States, 556 U.S. 599, 614 (2009).

285. *Id.*

286. *See id.* at 615.

fendant's activities took place, and the percentage of time the defendant operated that area.[287] In the wake of that seminal case, "federal trial courts across the country entertained the concept of divisibility, but mostly rejected it on the grounds that the defendant had not met its burden of proof."[288]

This framework for joint and several liability could, and should, apply to any climate adaptation liability scheme. With the benefit of CERCLA and common law developments, the drafters of CARLA can make explicit the application of joint and several liability to fossil fuel producers and the burden on them should they seek apportionment. The statute would then go on to specifically articulate the factors and burden of proof.

Assuming the universe of potentially responsible parties is limited according to one (or more) of the thresholds described in the prior section, the jointly and severally liable fossil fuel defendants would each have significant assets to contribute. There is no doubt they would try to argue divisibility. However, if the two-part *Burlington Northern* test applied, defendants would have a problem on the first element. From one perspective, climate change is the ultimate indivisible environmental harm—greenhouse gases from diffuse sources aggregate and comingle to create a layer of pollution that is rapidly warming the earth.[289] Looking instead at the harmful effects of climate change, though, could provide some basis for divisibility—adaptation costs differ depending upon whether the target is sea level rise or changes in precipitation or extreme weather events or any of the other well-documented climate effects. Understandably, it is nonetheless impossible for attribution science to tie any of these specific effects to a specific fossil fuel producer. Climate effects are not chemical contamination. Fossil fuel entities' contributions to climate change thus resemble CERCLA potentially responsible parties who all dumped the same chemical on the same site at different times.

As a policy matter, Congress could decide that the first *Burlington Northern* factor is not necessary in the climate adaptation context and draft CARLA to reflect that departure from CERCLA precedent. In that situation, fossil fuel defendants would only have the burden of establishing a reasonable basis on which to apportion liability. As described above, the Carbon Majors Report potentially provides that basis.[290] At least some members of Congress agree that dividing responsibility for adaptation costs proportional to contributions to fos-

287. *See id.* at 617.

288. Jessica J.O. King, *CERCLA Divisibility: Two Strikes and Bases Are Loaded*, WILLIAMS MULLEN (Nov. 16, 2015), https://perma.cc/5CMZ-YBMR.

289. *See* Am. Elec. Power Co. v. Connecticut 582 F.3d 309, 349 (2d Cir. 2009) (describing action seeking damages from greenhouse gas polluters as "a federal common law of nuisance case involving air pollution, where the ambient air contains pollution from multiple sources and where liability is joint and several").

290. *See infra* Part II.B.

sil fuel emissions makes sense.[291] In order to determine that contribution percentage, a court would likely have to turn to evidence about the relative portion of the market controlled by each fossil fuel company defendant. At least one scholar modeled how this might work in the related context of nuisance suits against greenhouse gas emitters.[292] Hence, apportionment in the climate adaptation context would much more closely resemble market share liability than divisibility under CERCLA.[293]

The justifications for recognizing market share liability do fit adaptation liability quite well. According to the Restatement, the appropriateness of market share liability depends on six factors:

> (1) The generic nature of the product; (2) the long latency period of the harm; (3) the inability of plaintiffs to discover which defendant's product caused plaintiff's harm; (4) the clarity of the causal connection between the defective product and the harm suffered by plaintiffs; (5) the absence of other medical or environmental factors that could have caused or materially contributed to the harm; and (6) the availability of sufficient "market share" data to support a reasonable apportionment of liability.[294]

Branded fossil fuels, especially after they are combusted and become carbon emissions, are indistinguishable from one another.[295] A plaintiff would have difficulty proving which specific atmospheric emissions came from which company, and similar difficulty proving which emissions represent the climate tipping point leading to more harmful effects. As one scholar put it, "a carbon is a carbon is a carbon"—where it comes from "makes no difference in terms of its impact."[296] Precedent exists for this approach; one of the only contexts where market share liability has been recognized outside of generic pharmaceuticals is environmental harm.[297] Specifically, New Hampshire courts applied market

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291. *See* Polluters Pay Climate Fund Act of 2021, 117th Cong. § 3(b)(1) (Senate discussion draft, Aug. 4, 2021), https://perma.cc/9PB2-3C6N (basing assessments on the ratio between "(A) the assessable person's applicable share of covered carbon dioxide and methane emissions [and] . . . (B) the aggregate covered carbon dioxide and methane emissions of all assessable entities which are required to pay an assessment under this section for such calendar year").

292. *See* Daniel J. Grimm, *Global Warming and Market Share Liability: A Proposed Model for Allocating Tort Damages Among CO2 Producers*, 32 COLUM. J. ENV'T L. 209, 218–32 (2007).

293. *See infra* Appendix B (including proposed language that tracks these suggestions).

294. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 15 cmt. c (1998).

295. *See* Kysar, *supra* note 5, at 37 (noting that "greenhouse gas emissions *do* seem to have that elusive quality of fungibility").

296. Zasloff, *supra* note 5, at 1,868 (arguing that carbon dioxide is fungible for purposes of market share liability).

297. *See, e.g.*, Samantha Lawson, *The Conundrum of Climate Change Causation: Using Market Share Liability to Satisfy the Identification Requirement in* Native Village of Kivalina v. Exxonmobil Co., 22 FORDHAM ENV'T L. REV. 433 (2010).

share liability to gasoline suppliers, ultimately upholding a determination that Exxon was liable for approximately thirty percent of certain damages based on its share of the New Hampshire gasoline market.[298] Importantly, the damages in the case compensated the state government for maintenance and infrastructure costs, including cleanup and equipment to treat contaminated drinking water.[299] These damages shifted the cost of pollution away from the state and its citizens, and onto the corporations responsible for the harm-causing pollutant entering the marketplace. Climate adaptation damages would serve the same function for a more widespread set of costs.

A default of joint and several liability in CARLA would put the burden of justifying apportionment or seeking contribution on the fossil fuel producers held liable by the strict liability provision outlined above. That approach would create considerable transaction costs, but at least the majority of those costs would be borne only by liable parties (and not the plaintiffs). That approach would also do the most to ensure that state and local governments actually receive adequate compensation. An alternative approach would codify the application of market share liability principles to climate adaptation liability. That approach has sound basis in theory and recent precedent. Either way, CARLA must clearly articulate the scope of relative liability. It is not enough to do as CERCLA did and rely on traditional tort principles.

C. Retroactive Liability

A "retroactive law" is a law "that looks backward or contemplates the past, affecting acts or facts that existed before the act came into effect."[300] Retroactivity is perhaps the most important feature of CERCLA liability. After all, the statute aimed to clean up sites that had already been contaminated. It would have been severely compromised on that dimension if it imposed liability only on the entities that owned or operated sites at the time of passage. Instead, CERCLA liability attaches to any party that fits into one of Section 107's four categories at any point in time. Retroactive liability is a rare and powerful tool that departs from the common law norm.[301] Negligence ordinarily judges the

298. *See* State v. Exxon Mobil Corp., 126 A.3d 266, 275 (2015) (affirming a jury finding "that Exxon's market share for gasoline in New Hampshire during the applicable time period was 28.94%").

299. *Id.* ("The jury awarded total damages in the amount of $816,768,018. These damages included: (a) $142,120,005 for past cleanup costs; (b) $218,219,948 to assess and clean up 228 high-risk sites; (c) $305,821,030 for sampling drinking water wells; and (d) $150,607,035 for treating drinking water wells contaminated with MTBE at or above the maximum contaminant level.").

300. *Retroactive Law*, BLACK'S LAW DICTIONARY (11th ed. 2019).

301. *See* Bernard W. Bell, *In Defense of Retroactive Laws*, 78 TEX. L. REV. 235, 237 (2000) (reviewing DANIEL E. TROY, RETROACTIVE LEGISLATION (1998)) ("[W]ith rare exceptions, Congress enacts strongly retroactive laws only in the tax area.").

reasonableness of an action at the time it was taken, not before or after. Consequently, the source of CERCLA liability's retroactive application must be the statute itself, not some underlying tort principle.

Like strict and joint and several liability, however, the statute's text did not speak explicitly on retroactivity. Some commentators initially pointed this out in forcefully arguing against its retroactive application.[302] The relevant portion of Section 107 uses past tense verbs to describe at least some of the potentially responsible parties.[303] Most significant of those provisions, Section 107(a)(2) imposes liability on "any person who *at the time of disposal* of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of."[304] That provision makes the time of disposal, rather than the time of the statute's enactment, the legally relevant point from which liability derives.

Courts interpreting the statute relied on this language and the legislative history to conclude that CERCLA holds responsible parties liable for acts committed before the passage of the statute.[305] In particular, federal district courts in New Hampshire, New Jersey, North Carolina, and Colorado noted that CERCLA's legislative history made clear that Congress intended it to be "backward looking."[306] By the mid 1980s, CERCLA's retroactive application was seemingly settled law. Nonetheless, as the Supreme Court has considered the retroactive application of other statutes, some commentators have called for a reexamination of CERCLA.[307] While a few lower courts have taken up that project,[308] neither the Supreme Court nor Congress have waded in to change

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302. George Clemon Freeman, Jr., *Inappropriate and Unconstitutional Retroactive Application of Superfund Liability*, 42 BUS. L. 215, 222 (1986) ("In short, there is no express language of Superfund to support liability for pre-enactment conduct . . . ."); *id.* at 219 ("But while the law is thus continually adding to its specific rules, it does accept the coarse and impolitic principle that a man acts always at his peril.") (quoting OLIVER WENDELL HOLMES, JR., THE COMMON LAW 149 (1923)).

303. *See* 42 U.S.C § 9607(a) (using "owned," "operated," "arranged," and "accepted").

304. 42 U.S.C § 9607(a)(2).

305. *See, e.g.*, United States v. Ne. Pharm. & Chem. Co., 579 F. Supp. 823, 839 (W.D. Mo. 1984), *aff'd in part, rev'd in part, and remanded,* United States v. Ne. Pharm. & Chem. Co., 810 F.2d 726, 732 (8th Cir. 1986), *cert, denied*, 108 S. Ct. 146 (1987); United States v. S. C. Recycling & Disposal, 653 F. Supp. 984, 997 (D.S.C. 1984); United States v. Wade, 20 ENV'T REP. CASES 1849, 1850 (E.D. Pa. 1984); State *ex rel* Brown v. Georgeoff, 562 F. Supp. 1300, 1314 (N.D. Ohio 1983).

306. United States v. Ottati & Goss, 630 F. Supp. 1361, 1398 (D.N.H. 1985); United States v. Ward, 618 F. Supp. 884, 898 (E.D.N.C. 1985); United States v. Shell Oil Co., 605 F. Supp. 1064, 1072 (D. Colo. 1985).

307. *See, e.g.*, David Seidman, *Questioning the Retroactivity of CERCLA in Light of* Landgraf v. USI Film Products {114 S. Ct. 1483 (1994)}, 52 WASH. U. J. URB. & CONTEMP. L. 437 (1997).

308. *See, e.g.*, United States v. Olin Corp., 927 F. Supp. 1502 (S.D. Ala. 1996), *rev'd*, 107 F.3d 1506 (11th Cir. 1997).

how CERCLA operates. The prevailing interpretation remains that CERCLA imposes retroactive liability.

Much like contaminated sites in 1980, the atmosphere is already polluted by greenhouse gases. While something might be done to mitigate its degree, climate change is a reality thanks to historical emissions. Those emissions can largely be traced to the fossil fuel industry and further isolated within that industry to a subset of the worst contributors. Certainly, CERCLA-style retroactivity makes a great deal of sense, especially as newer and possibly disrupting geopolitical events and new industry may cause previous emitters to leave the market. All of these factors make retroactivity a necessary feature of any effective climate adaptation liability scheme.

However, in the case of greenhouse gas pollution, the relevant timescale is not as straightforward as industrial contamination. Most greenhouse gases are "stock" pollutants, capable of persisting in the atmosphere and warming the planet for decades, even centuries.[309] In contrast, the contaminated sites CERCLA sought to address dated at most back to the industrial revolution in the early twentieth century. Thus, the question in crafting CARLA is how far back to look when determining who is liable and, if apportionment applies, in what amount. The question is one of policy and one of scientific capability. With respect to policy, an appropriate cutoff would be the time that the fossil fuel industry possessed information indicating that climate change would result from their continued operation. Investigative journalism has uncovered reports to the American Petroleum Institute dating back to 1968 that warn of the dangers of carbon dioxide pollution and resultant global warming.[310] Retroactivity at least to that date consequently comes with some supporting moral justification. With respect to science, Richard Heede's seminal accountability work tracked contributions to climate change from fossil fuel producers all the way back to the 1850s.[311] Much of the subsequent work has focused on a narrower window of time between the 1980s and today.[312] Nonetheless, the existing body of scientific work indicates that lack of data will not constrain the reach of retroactive liability for climate adaptation. Instead, the policy question should determine the scope of CARLA's retroactive application.

There is no question that retroactivity is essential to any functioning climate adaptation liability scheme. Adaptation is necessary at this point due to actions that will necessarily predate the passage of CARLA. Recent, post-CERCLA Supreme Court precedent indicates that the Court will generally

309. *See* Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1164–66 (2009) (describing the "stock/flow" characteristics of the climate problem).

310. *See* ELMER ROBINSON & R.C. ROBBINS, FINAL REPORT TO THE AMERICAN PETROLEUM INSTITUTE (API) (1968).

311. *See* Heede, *supra* note 177.

312. *See supra* Part II.B.

interpret ambiguous statutory provisions against their retroactive application.[313] Consequently, "if Congress intends civil legislation to have retroactive effect, it must clearly state that the law applies retroactively and may even wish to specify the period of retroactivity."[314] CARLA must therefore include a simple, straightforward clause stating that liability pursuant to the statute applies retroactively to fossil fuel activities. This will undoubtedly come at a political cost, but it sets the necessary terms of debate given the current concentrations of greenhouse gases in the atmosphere and the inevitability of at least some warming and associated adaptation costs. How far back in time the statutory liability reaches (rather than retroactivity at all) could be the appropriate subject of the almost certain political debate.

Conclusion

Climate policy in the United States faces a new reality. On the mitigation side, the ball has been passed to the state and local governments. If two decades of Congressional inaction were not enough evidence of this, the United States Supreme Court's decision in *West Virginia v. EPA*[315] made it clear. Federal action, if it comes at all, will be too little, too late. With that realization comes increased importance of the other half of the climate policy equation—adaptation. Currently, the financial burden of climate adaptation sits with those same state and local governments. Many of them have wisely turned to the torts system to shift at least some costs to the corporations responsible for pushing fossil fuels with no regard for the environmental consequences. Some of their cases may succeed, and others may fail. That may be the end of the story. But as they sit pending, the federal government has the opportunity to take a lesson from history, step in, and fashion an efficient system of climate adaptation liability.

A Climate Adaptation Resilience and Liability Act, or CARLA, would promote efficiency, appropriately redistribute the economic burdens of climate change, and, most importantly, help protect some of our most vulnerable citizens. Thankfully, as argued above, there exist some strong practical and political arguments to compel at least the drafting and introduction of legislation in Congress. Nonetheless, should those incentives prove less than motivating, I offer one final suggestion as to how interested citizens might increase pressure on the federal government. State legislatures can pass their own mini-

313. *See* Landgraf v. USI Film Prods., 511 U.S. 244, 245 (1994) ("The presumption against statutory retroactivity is founded upon elementary considerations of fairness dictating that individuals should have an opportunity to know what the law is and to conform their conduct accordingly.").

314. Joanna Lampe, Cong. Rsch. Serv., IF11293, Retroactive Legislation: A Primer for Congress 2 (2019).

315. 142 S. Ct. 2587 (2022).

CARLAs. No current federal law preempts them. States have for centuries modified the common law of torts within their borders by statute. A mini-CARLA would decidedly do nothing more than that, at least legally. Politically, such a patchwork of state legislative action would likely have a similar effect to disparate litigation activity across jurisdictions—it would make a uniform, federal scheme attractive to both plaintiffs *and* defendants.

At the end of days, we may not think to ask who paid for the massive sea walls holding the rising ocean back from drowning us in our homes. But today, that question is still salient and, more than that, vitally important. We can let a bunch of state courts give different answers over the next decade. Or the federal government could enact CARLA. Let us hope that members of Congress have some of that ever-popular 1980s nostalgia.

Appendix A

[Model text for the liability section of CARLA]

CARLA Section 107

(a) Covered persons; scope; recoverable costs and damages
Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section—

(1) the producer or distributor of a fossil fuel,
(2) any person who at the time of distribution of any fossil fuel owned or operated any facility at which such fossil fuels were produced or distributed,
(3) any person who by contract, agreement, or otherwise arranged for production or distribution of fossil fuels, or arranged with a transporter for transport of fossil fuels, owned or possessed by such person, by any other party or entity, at any facility owned or operated by another party or entity and producing such fossil fuels,
(4) any person who accepts or accepted any fossil fuels for transport to distribution facilities, which causes, by way of contributing fossil fuels that account for at least 0.05% of the total carbon dioxide and methane gas emissions over the last twenty years, the incurrence of climate adaptation costs shall be liable for —
    (A) all costs of infrastructure adaptation incurred by the Municipality, State or Indian tribe;
    (B) any other necessary costs of response and/or adaptation incurred by any other person; and
    (C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from climate change effects.

The amounts recoverable in an action under this section shall include interest on the amounts recoverable under subparagraphs (A) through (C). Such interest shall accrue from the later of (i) the date of payment of a specified amount is demanded in writing, or (ii) the date of the expenditure concerned.

(b) Defenses
There shall be no liability under subsection (a) of this section for a person otherwise liable who can establish by a preponderance of the evidence that their involvement with fossil fuels was solely the consequence of—

(1) an act of war;
(2) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection

with a contractual relationship, existing directly or indirectly, with the defendant
(3) any combination of the foregoing paragraphs.

Appendix B

[Model text for the contribution section of CARLA]

CARLA Section 113

(a) Nationwide service of process
In any action by the United States under this chapter, process may be served in any district where the defendant is found, resides, transacts business, or has appointed an agent for the service of process.

(b) Contribution

(1) Contribution
Any person may seek contribution from any other person who is liable or potentially liable under section 107(a) of this title, during or following any civil action under this title. Such claims shall be brought in accordance with this section and the Federal Rules of Civil Procedure, and shall be governed by Federal law. In resolving contribution claims, the court may allocate adaptation costs among liable parties based upon the relative portion of the geographic market affected that is controlled by each fossil fuel company defendant.
(2) Settlement
A person who has resolved its liability to the Municipality, State or Indian tribe in an administrative or judicially approved settlement shall not be liable for claims for contribution regarding matters addressed in the settlement. Such settlement does not discharge any of the other potentially liable persons unless its terms so provide, but it reduces the potential liability of the others by the amount of the settlement.
(3) Persons not party to settlement
(A) If the Municipality, State or Indian tribe has obtained less than complete relief from a person who has resolved its liability to the United States or the State in an administrative or judicially approved settlement, the United States or the State may bring an action against any person who has not so resolved its liability.
(B) A person who has resolved its liability to the Municipality, State or Indian tribe for some or all of a response action or for some or all of the costs of such action in an administrative or judicially approved settlement may seek contribution from any person who is not party to a settlement referred to in paragraph (2).
(C) In any action under this paragraph, the rights of any person who has resolved its liability to the Municipality, State or Indian tribe shall be subordinate to the rights of the Municipality, State or Indian tribe. Any contribution action brought under this paragraph shall be governed by Federal law.