When Climate Change Forces Flight: Legal Duties in the Age of Retreat

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ABSTRACT: In the face of climate-driven disasters, government officials and individuals alike must decide whether to invest in climate-exposed areas or retreat. This Article analyzes emerging legal and policy issues associated with both climate retreat (when the government relocates people and infrastructure away from climate-exposed areas) and abandonment (when individuals leave climate-exposed areas, following natural disasters or otherwise). I argue that government-driven climate retreat must consider four overlapping legal duties, raising novel questions in an era of climate destabilization. First, does the government have an affirmative duty to rescue its citizens, and is this duty transformed by the government's role in shaping climate policy? Second, is the duty to repair infrastructure a mandatory ministerial duty requiring governmental action or more of a discretionary function? Third, is there an affirmative duty to upgrade infrastructure in the face of known climate risk? Finally, is there a legal duty for quasi-public utilities to continue service at all costs, even to climate-exposed communities that have been identified for relocation or retreat?

In contrast, the law of climate abandonment addresses the legal duties that an individual owes to society when abandoning homes in the face of climate disaster. Determining cleanup responsibility following abandonment is complicated by changing property lines that shift in response to climate impacts. This Article offers recommendations and a normative pathway to help navigate the complex legal thicket associated with the law of climate retreat and abandonment. Legal doctrines governing both retreat and abandonment must evolve to meet the climate moment. Policymakers should favor managed retreat over ad hoc, reactive abandonment by individuals.

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INTRODUCTION

Floodwaters rushed through Floyd County, Kentucky. County residents and federal, state, and local officials alike shook their collective heads in disbelief. The federal government had just declared Floyd County a federal disaster area, again. The latest Floyd County disaster declaration marked the thirteenth time in twelve years that this small county, far from the coast and deep in the Kentucky hollers, received this dubious distinction.[1] Meanwhile, in faraway Los Angeles, a series of wildfires ravaged entire neighborhoods, raising questions about the adequacy of the government's response and its

1. Seth Borenstein, *Data Shows Hurricanes and Earthquakes Grab Headlines but Inland Counties Top Disaster List*, ASSOCIATED PRESS (July 23, 2024), https://www.ap.org/news-highlights/spotlights/2024/data-shows-hurricanes-and-earthquakes-grab-headlines-but-inland-counties-top-disaster-list [https://perma.cc/BY6Q-63NP] ("Floyd County's government received more than $35 million in FEMA disaster aid since 2011."). Most recently, in the aftermath of Hurricane Helene, entire Asheville, North Carolina, urban districts and neighborhoods were washed away, triggering another major disaster declaration. *President Joseph R. Biden, Jr. Approves North Carolina Disaster Declaration*, WHITE HOUSE (Sept. 28, 2024), https://bidenwhitehouse.archives.gov/briefing-room/presidential-actions/2024/09/28/president-joseph-r-biden-jr-approves-north-carolina-disaster-declaration-3 [https://perma.cc/MS56-JNZ8]; Martha Quillin, *'Hopeless and Helpless': River Arts District in Asheville Was Another Casualty of Helene*, CHARLOTTE OBSERVER (Dec. 3, 2024, 7:03 PM), https://www.charlotteobserver.com/news/state/north-carolina/article293366679.html (on file with the *Iowa Law Review*). The Stafford Act defines "major disaster" broadly as:

> [A]ny natural catastrophe (including any hurricane, tornado, storm, high water, winddriven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance.

42 U.S.C. § 5122(2) (2018).

role in subsidizing risk before disaster struck. Should large swaths of Floyd County and Los Angeles be rebuilt? Or should the local government and its citizens instead retreat?[2]

Such disasters are no longer unforeseeable. Former "Acts of God" are now routine "Acts of Nature," fueled by human activity and governmental indifference. By one measure, 113.6 million people in the United States reside in a "Climate Abandonment Area" or "Risky Growth Area"—nearly one-third of the entire U.S. population.[3] Several rural counties in Kentucky and faraway Vermont have experienced disasters four to five times the national level.[4] Floyd County was not even the nation's most disaster-prone county: That (dis)honor belonged to nearby Johnson County, Kentucky, which has experienced fifteen federally declared disasters since 2011.[5] As disasters occur again and again, citizens and governmental officials alike are considering the once-unthinkable: retreating from and abandoning their homes, infrastructure, and communities to save lives and build a more resilient future.[6]

Indeed, rising climate impacts demand difficult decisions—what a group of influential scientists has called "transformational action."[7] Failure to consider the full menu of adaptation options will impose real, long-term harm. Troublingly, Americans are moving to climate-exposed areas in record

2. Sadly, questions swirling around whether to rebuild or save entire communities are not new. *See, e.g.*, Mike Davis, *The Case for Letting Malibu Burn*, 19 ENV'T HIST. REV. 1, 4 (1995).

3. FIRST ST. FOUND., CLIMATE ABANDONMENT AREAS 14 (2023) [hereinafter CLIMATE ABANDONMENT AREAS], https://hubspot.firststreet.org/hubfs/National%20Risk%20Assessment%20Reports/Climate%20Abandonment%20-%20National%20Risk%20Assessment%20-%20Dec%202023.pdf [https://perma.cc/PV9A-YFVK].

4. *Atlas of Accountability (2011-2024)*, REBUILD BY DESIGN, https://rebuildbydesign.org/atlas-of-disaster [https://perma.cc/6ETL-AJ5Z].

5. Borenstein, *supra* note 1 ("Flooding is the most common disaster in the United States . . . . Since 2011, FEMA handed out more than $41 billion in aid following hurricanes, the most of any disaster type.").

6. In the United States, managed retreat has become an increasingly valid adaptation option, and several Native American tribes are receiving federal funding to move their historic homes. Christopher Flavelle, *In a First, U.S. Pays Tribes to Move Away from Climate Threats*, N.Y. TIMES (Nov. 4, 2022, 3:42 PM), https://www.nytimes.com/2022/11/04/climate/native-americans-relocate-climate-change.html (on file with the *Iowa Law Review*).

7. *See* WORLD METEOROLOGICAL ORG., UNITED IN SCIENCE 2020, at 3 (2020), https://library.wmo.int/viewer/57145/download?file=United_In_Science_2020_8_Sep_FINAL%281%29.pdf&type=pdf&navigator=1 [https://perma.cc/AY6T-LL7R] (calling for transformational action); *see also* AR Siders, Idowu Ajibade & David Casagrande, *Transformative Potential of Managed Retreat as Climate Adaptation*, 50 CURRENT OP. ENV'T SUSTAINABILITY 272, 275 (2021) ("[T]he concept of managed retreat has potential to promote social transformation by changing perceptions, narratives, and norms about climate adaptation."). Some scholars have suggested that we are now entering a new geological period that is affecting property and tort law. *See, e.g.*, Eric Biber, *Law in the Anthropocene Epoch*, 106 GEO. L.J. 1, 42–48 (2017).

numbers[8]—witness the continual in-state migration to Texas and Florida that accelerated throughout the COVID-19 crisis.[9] However, the private insurance industry has become aware of climate risk and is in full-scale retreat from several states.[10]

In the summer of 2024, Hurricane Beryl pummeled Houston, Texas, leaving millions of residents without power for an extended period.[11] People are finally beginning to ask, "Is staying worth it?"[12] Too often, *unmanaged retreat* from climate-exposed areas has emerged as the default adaptation strategy in the absence of a better plan.[13] In several instances, governmental officials may choose to retreat by deliberately disinvesting from climate-exposed areas.[14]

This Article is the third in a series of projects addressing how climate-driven physical destabilization is, in turn, disrupting a legal operating system designed for a far more stable time.

First, in *The Legal Crisis Within the Climate Crisis*, I argued that laws, doctrines, and policies must be updated for a climate-destabilized future, focusing on three adaptation strategies.[15] These strategies include: (1) resistance—such as building physical barriers that armor shoreline properties;[16] (2) accommodation—such as elevating structures or mandating climate-resilient zoning to accommodate for climate change;[17] and (3) retreat—systematically

8. *Net Migration by State*, TAMPA BAY ECON. DEV. COUNCIL (Mar. 2022), https://tampabayedc.com/wp-content/uploads/2022/05/2020-2021-Net-Migration-by-State.pdf [https://perma.cc/2PFB-GVB4] (presenting U.S. Census data showing Florida and Texas led the nation in domestic migration in 2020 to 2021).

9. *See* Luke Rogers, Marc Perry & Lindsay Spell, *Two Years into Pandemic, Domestic Migration Trends Shifted*, U.S. CENSUS BUREAU (Mar. 30, 2023), https://www.census.gov/library/stories/2023/03/domestic-migration-trends-shifted.html [https://perma.cc/Z7LM-QSJ3].

10. *See, e.g.*, Mark Nevitt & Michael Pappas, *Climate Risk, Insurance Retreat, and State Response*, 58 GA. L. REV. 1603, 1617 (2024) ("[S]ome insurance companies are exiting from climate-exposed areas. For example, Allstate and State Farm have chosen to stop issuing new policies in California. Similarly, in Louisiana, insurance companies have halted the issuance of policies in areas prone to hurricanes." (footnotes omitted)).

11. J. David Goodman, *Beryl Leaves Millions Without Power in Houston: What to Know*, N.Y. TIMES (July 9, 2024), https://www.nytimes.com/2024/07/09/us/beryl-storm-forecast.html (on file with the *Iowa Law Review*).

12. *See id.*

13. *See, e.g.*, A.R. Siders, *Social Justice Implications of US Managed Retreat Buyout Programs*, 152 CLIMATIC CHANGE 239, 251–53 (2019); H. PARNHAM, [MANAGED] RETREAT: THE ELEPHANT IN THE ADAPTATION FRAMEWORK 7 (2023) ("Whether or not we are prepared to manage a retreat, unmanaged retreat will continue to occur at higher costs and lost opportunities.").

14. *See Managed Retreat Toolkit: Infrastructure Disinvestment*, GEO. CLIMATE CTR., https://www.georgetownclimate.org/adaptation/toolkits/managed-retreat-toolkit/infrastructure-disinvestment.html [https://perma.cc/E73D-RJSU].

15. Mark Nevitt, *The Legal Crisis Within the Climate Crisis*, 76 STAN. L. REV. 1051, 1060 (2024) [hereinafter Nevitt, *Legal Crisis*].

16. *Id.* at 1067–76.

17. *Id.* at 1076–96.

moving people and property out of harm's way.[18] Legal doctrines that may have worked for a stable "Earth 1.0"[19] will prove unworkable for a climate-destabilized "Earth 2.0."[20]

Second, in *Destroy, Rebuild, Repeat: How to Break the Climate Disaster Cycle*, I proposed a new normative framework to break the climate disaster cycle, focusing first on democratizing climate risk information and retreating wherever possible.[21] This framework highlights that retreat is but one option for many communities, but retreat is often hindered by laws, policies, and programs designed for a more stable time.[22]

In the short time since I completed these earlier projects, managed retreat has grown in importance as a bona fide adaptation option.[23] In this Article, I argue that the related concepts of retreat and abandonment are different sides of the surrender coin. In this conception, retreat informs governmental laws and policies, while abandonment drives individual decisions to surrender property to the forces of nature. Climate retreat and abandonment are viewed as a bona fide climate adaptation strategy, given the increasing scope, scale, and intensity of natural disasters—a spiraling, negative trend that worsens as world greenhouse gas ("GHG") emissions surge ever higher and the Paris Agreement's emissions goals fall short.[24]

This is the first Article to comprehensively address the legal duties associated with the "law of climate retreat and abandonment." I argue that legislators, homeowners, and renters alike will embrace retreat and abandonment as legitimate adaptation options in an era of climate-driven destabilization.[25] Although there is a growing body of literature addressing

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18. *Id.* at 1096–1111.

19. *Id.* at 1054.

20. *Id.* at 1054–55.

21. Mark Nevitt, *Destroy, Rebuild, Repeat: How to Break the Climate Disaster Cycle*, 78 VAND. L. REV. 493, 515–16, 524–28 (2025) [hereinafter Nevitt, *Destroy, Rebuild, Repeat*].

22. *Id.* at 528.

23. *See Managed Retreat Toolkit: Infrastructure Disinvestment*, *supra* note 14 (noting that "coastal governments and communities are increasingly evaluating managed retreat" as a climate adaptation strategy).

24. There is no end in sight, as new coal-fired power plants come online in India, China, and the developing world and nations continue to emit more GHG than at any point in recorded history. *Global Greenhouse Gas Overview*, ENV'T PROT. AGENCY (Aug. 19, 2025), https://www.epa.gov/ghgemissions/global-greenhouse-gas-overview [https://perma.cc/K629-4XVN]. And, in January 2025, President Trump just announced that the United States is withdrawing from the Paris Agreement. *See* Putting America First in International Environmental Agreements, 90 Fed. Reg. 8455, 8455 (Jan. 30, 2025) ("The United States Ambassador to the United Nations shall immediately submit formal written notification of the United States' withdrawal from the Paris Agreement under the United Nations Framework Convention on Climate Change.").

25. The three core adaptation strategies are resistance, accommodation, and retreat. *See* J.B. Ruhl, *Climate Adaptation Law*, *in* GLOBAL CLIMATE CHANGE AND U.S. LAW 611, 626–28 (Michael B. Gerrard, Jody Freeman & Michael Burger eds., 3d ed. 2023) (defining the three categories as

planned relocation and incremental adaptation, guidance is lacking for larger measures, such as infrastructure abandonment or relocation and the aggregation of small measures.[26] And unlike "climate proofing" strategies such as building sea walls or armoring shorelines, retreat will be driven by a recognition that physical resistance is futile for the most climate-exposed communities.

Despite the clear need for transformational climate action and the emergence of climate retreat and abandonment strategies, existing legal duties and doctrines obstruct broader retreat efforts. These doctrines raise essential questions, such as: What are the precise duties that the government owes to its citizens when deciding to disinvest and retreat from climate-exposed areas? What legal responsibilities do citizens owe to the government and each other when choosing to abandon their property? What metrics or trigger points should be employed when retreat is pursued as the preferred adaptation choice? And how should retreat be managed, implemented, and funded? These weighty questions strike at the core of the government's relationship to its citizens and the duties that an individual owes to society.[27]

Part I examines the roles that climate science, improved access to climate risk information, and insurance retreat play in the adaptation debate. Within the United States, the Fifth National Climate Assessment and a growing body of financial, investment, and actuarial literature showcase the peril of staying in place at all costs.[28] I address the increasing phenomenon of homes being washed away into the ocean or abandoned by their owners before disaster strikes. This dystopian scenario is a reality for a rising number of communities, particularly those located along barrier islands, flood-prone rural areas, or the

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resistance, resilience, and retreat); John Carey, *Managed Retreat Increasingly Seen as Necessary in Response to Climate Change's Fury*, 117 PNAS 13182, 13182 (2020); Andrew L. Dannenberg, Howard Frumkin, Jeremy J. Hess & Kristie L. Ebi, *Managed Retreat as a Strategy for Climate Change Adaptation in Small Communities: Public Health Implications*, CLIMATIC CHANGE 1, 2 (2019), https://link.springer.com/article/10.1007/s10584-019-02382-0 (on file with the *Iowa Law Review*). To be sure, two adaptation strategies—accommodation and resistance—are limited by their own legal, financial, and political hurdles. *See* Nevitt, *Legal Crisis*, *supra* note 15, at 1067–96.

26. ALLISON R. CRIMMINS ET AL., U.S. GLOB. CHANGE RSCH. PROGRAM, FIFTH NATIONAL CLIMATE ASSESSMENT 9–27 (Emily K. Laidlaw ed., 2023) [hereinafter NCA5]. There is some overlap in how the terms "abandonment," "retreat," and "relocation" are used. For example, planned relocation and incremental retreat focuses on "intentionally abandoning areas subject to harms and relocating people and businesses to less vulnerable areas." *Id.* For purposes of this paper I use the term "retreat" as a shorthand to describe government-led relocation efforts and "abandonment" to describe individual decisions to relocate which are made independent of governmental programs or policies.

27. Traditional property law may not have all the answers to these questions. Eduardo M. Peñalver, *Property as Entrance*, 91 VA. L. REV. 1889, 1894–95 (2005) (proposing "a different conception of the means by which property mediates between the individual and the community: property as entrance").

28. But the market is far from perfect, and increased access to information can only do so much. For an outstanding summary of the market's role in failing to assess climate risk, see Madison Condon, *Market Myopia's Climate Bubble*, 2022 UTAH L. REV. 63, 70–78.

wildland-urban interface. Moreover, remaining in place endangers both residents and first responders alike.[29]

Part II describes and analyzes four duties that the government owes to its citizens, which are of growing importance in the context of climate retreat and abandonment. These four duties, which at times overlap, include the following:

First, the government's *duty to repair and maintain* is implicated when governmental officials fail to maintain or repair climate-impacted infrastructure. The scope of the duty to repair and maintain infrastructure is often a question of state law.[30] Sometimes disinvestment is hidden from the public view without meaningful public comment and input—what I refer to as *shadow disinvestment*.[31] Shadow disinvestment is of particular concern for underserved communities that already bear the brunt of climate impacts, thereby raising broader concerns about climate and environmental justice.

Second, the government's *duty to upgrade* infrastructure in the face of known climate risk may lead to negligence or takings claims if a local government fails to do so.[32] Indeed, as climate impacts are better understood, governments can no longer claim ignorance about the underlying climate risk and will come face to face with costly upgrade decisions.[33] What's more, questions swirling around both the duty to upgrade and repair highlight the "climate adaptation paradox": namely, that taking sensible, proactive adaptation steps creates legal liability, disincentivizing adaptation action. After all, there is no duty to repair or upgrade if a sea wall, levee, or dam was not built in the first place.[34]

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29. To highlight one recent example, six firefighters lost their lives in California responding to an extreme wildfire event in 2018. *See* Sarah Ravani & Lauren Hernandez, *California Wildfires: Firefighter's Death the 6th of 2018; Yosemite Reopens*, SFGATE (Aug. 14, 2018, 9:32 PM), https://www.sfgate.com/california-wildfires/article/Mendocino-Complex-fires-claim-first-life-5-000-13154845.php [https://perma.cc/AF3J-77D4].

30. *See, e.g.*, Shana Jones et al., *Roads to Nowhere in Four States: State and Local Governments in the Atlantic Southeast Facing Sea-Level Rise*, 44 COLUM. J. ENV'T L. 67, 82–98 (2019) (describing the duty to repair, upgrade, or abandon roads as a "doctrinal stew").

31. For example, a Florida County attempted to abandon a key coastal road without following requisite abandonment procedures, a classic example of shadow disinvestment. *See* Jordan v. St. Johns County, 63 So. 3d 835, 836–37 (Fla. Dist. Ct. App. 2011).

32. *See* City of El Paso v. Ramirez, 349 S.W.3d 181, 186–87 (Tex. App. 2011) (holding that the City's inability to prevent overflow from a retention pond when the City had knowledge about the underlining risk could give rise to a negligence claim); Arreola v. County of Monterey, 122 Cal. Rptr. 2d 38, 55 (Ct. App. 2002) (finding liability for governmental inaction in the face of a known risk).

33. *See* Litz v. Md. Dep't of the Env't, 131 A.3d 923, 930 (Md. 2016).

34. *Arreola*, 122 Cal. Rptr. 2d at 53–54; *see also* Ark. Game & Fish Comm'n v. United States, 568 U.S. 23, 38 (2012) (finding that a temporary flooding caused by government flood management and the release of water from a dam may be a taking). Professor Dan Farber first raised this idea, what he refers to as the "Adaptation Dilemma." *See* Dan Farber, *Temporary Takings and the Adaptation Dilemma*, LEGAL PLANET (May 6, 2024), https://legal-planet.org/2024/05/06/temporary-takings-and-the-adaptation-dilemma [https://perma.cc/533Q-8UN4].

Third, the government's *duty to rescue* and provide emergency services is implicated when governmental officials halt emergency services to climate-exposed areas.[35] Responding to climate disasters exposes emergency first responders to increasingly dangerous conditions that can only be alleviated by retreating from certain areas.[36] As a general matter, the government lacks an affirmative duty to rescue its citizens from harm, nor is there an affirmative duty to protect individuals. But the duty to rescue is modified when the government causes the underlying danger. This danger-creation exception complicates the duty to rescue in light of the government's role in fossil fuel extraction on public lands and its central role in shaping climate policy.[37]

Finally, the *duty to serve* implicates the governmental provision of key services (water, sewage, electricity) to communities.[38] Once these services are provided, a new potential legal duty may arise, complicating efforts to shut off service or disinvest from communities exposed to climate change.[39]

Part III describes and analyzes the law of climate abandonment: What legal duties are implicated when a citizen abandons their home in the face of climate risk? Once disaster strikes, private and public property and infrastructure are often destroyed and abandoned, with unclear accountability over who pays for the mess. Ex ante abandonment is increasingly seen as a rational climate adaptation option for a large swath of homeowners and renters. Abandoning one's home is hard enough, but assigning responsibility for cleanup in the face of shifting property lines makes this task even more

35. The federal government, through the Coast Guard, National Guard, FEMA, and "Title 10" federal military forces, also plays a leading role within the Stafford Act's disaster response framework. Nevitt, *Destroy, Rebuild, Repeat*, *supra* note 21, at 505; Mark Nevitt, *Domestic Military Operations and the Coronavirus Pandemic*, 11 J. NAT'L SEC. L. & POL'Y 107, 121 (2020).

36. Nevitt, *Destroy, Rebuild, Repeat*, *supra* note 21, at 506.

37. DeShaney v. Winnebago Cnty. Dep't of Soc. Servs., 489 U.S. 189, 199–200 (1989) (outlining the danger creation exception). Some litigants have argued that the government's role in leasing to fossil fuel companies leads to climate danger. Juliana v. United States, 217 F. Supp. 3d 1224, 1252 (D. Or. 2016). In 2009, the Environmental Protection Agency ("EPA") determined that GHG emissions endanger public health. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496, 66497 (Dec. 15, 2009). *But see* Press Release, Env't Prot. Agency, EPA Releases Proposal to Rescind Obama-Era Endangerment Finding, Regulations that Paved the Way for Electric Vehicle Mandates (July 30, 2025), https://www.epa.gov/newsreleases/epa-releases-proposal-rescind-obama-era-endangerment-finding-regulations-paved-way [https://perma.cc/W44N-MBBK].

38. *See, e.g.*, Jim Rossi & Michael Panfil, *Climate Resilience and Private Law's Duty to Adapt*, 100 N.C. L. REV. 1135, 1142 (2022); Heather Payne, *Unservice: Reconceptualizing the Utility Duty to Serve in Light of Climate Change*, 56 U. RICH. L. REV. 603, 604 (2022); Travis Martay Brennan, Comment, *Redefining the American Coastline: Can the Government Withdraw Basic Services from the Coast and Avoid Takings Claims?*, 14 OCEAN & COASTAL L.J. 101, 119 (2008).

39. *See, e.g.*, Payne, *supra* note 38, at 614; ROMANY M. WEBB, MICHAEL PANFIL & SARAH LADIN, CLIMATE RISK IN THE ELECTRICITY SECTOR: LEGAL OBLIGATIONS TO ADVANCE CLIMATE RESILIENCE PLANNING BY ELECTRIC UTILITIES 23 (2020), https://scholarship.law.columbia.edu/sabin_climate_change/44 [https://perma.cc/5L8N-YJUE].

challenging.[40] Determining precise responsibility is complicated by the law of accretion, avulsion, and erosion—older common law property law doctrines that define how property lines shift over time.[41]

Part IV offers a normative pathway with recommendations to navigate this complex legal thicket of legal duties and antiquated doctrines. Although there are legal duties and political headwinds that hinder broadscale retreat, I argue that in many instances, retreat should be favored over resistance and accommodation. My preference is informed by climate realities—the scale of the climate crisis, insurance industry collapse, and the growing costs of rebuilding in place. But *any* retreat will be messy and litigious. And governments may seek to short-circuit the retreat process via shadow disinvestment—an approach that should be avoided at all costs.

I. CLIMATE SCIENCE AND SHIFTING RETREAT DEMOGRAPHICS

A single home in Mississippi was rebuilt 34 times in 32 years using $663,000 in federal tax dollars—for a home worth only $69,000.[42]

Climate science advances will continue to drive adaptation decision-making while also highlighting climate-exposed areas that are plausible candidates for retreat. But determining to permanently retreat is challenging even with the best information and most up-to-date science. Further, how we talk about retreat and relocation can influence difficult decisions on whether to stay or retreat from climate-exposed areas.[43] Tragically, there is also a "destroy–rebuild–repeat" pattern as homes are continuously rebuilt at enormous taxpayer expense.[44] Too often, ex ante adaptation laws and policies are disconnected from ex post disaster laws and policies.

A. RETREAT: AN ADAPTATION OPTION GROWING IN IMPORTANCE

The Fifth National Climate Assessment ("NCA"), released in November 2023, provides a clear overview of the climate impacts facing many

40. For an outstanding discussion of the growing problem of debris removal and cleanup, see Thomas Ruppert, *Take Out the Trash When You Leave: Cleaning Up Properties Abandoned to Rising Seas*, *in* A BLUEPRINT FOR COASTAL ADAPTATION 213, 215 (Carolyn Kousky, Billy Fleming & Alan M. Berger eds., 2021) [hereinafter Ruppert, *Take Out the Trash*].

41. ANNE SIDERS, MANAGED COASTAL RETREAT: A LEGAL HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS 43 (2013) [hereinafter SIDERS, COASTAL RETREAT HANDBOOK].

42. Mark Nevitt, *Destroy, Rebuild, Repeat: Breaking the Climate-Disaster Cycle*, LAWFARE (July 2, 2024, 2:40 PM), https://www.lawfaremedia.org/article/destroy–rebuild–repeat–breaking-the-climate-disaster-cycle [https://perma.cc/N45D-N4RF] (citing A.R. Siders, *Managed Retreat in the United States*, 1 ONE EARTH 216, 219 (2019) [hereinafter Siders, *Managed Retreat in the United States*]).

43. Helen Bromhead, *"Managed Retreat" Is a Terrible Way to Talk About Responding to Climate Change*, SLATE (Apr. 4, 2022, 5:50 AM), https://slate.com/technology/2022/04/managed-retreat-climate-change-language.html [https://perma.cc/4AZQ-VLTT].

44. *See* Nevitt, *Destroy, Rebuild, Repeat*, *supra* note 21, at 540.

communities.[45] The NCA estimates that retreat will be "unavoidable" for many U.S. communities, particularly those along the coast.[46] It states that "[t]he continued increase in the frequency and extent of high-tide flooding due to sea level rise threatens America's trillion-dollar coastal property market and public infrastructure, with cascading impacts to the larger economy."[47]

The financial and insurance sectors concur with this bleak assessment. For example, the real estate firm Zillow estimates that $1.75 trillion in coastal real estate will be subject to increased flood risk by 2100.[48] Meanwhile, insurance companies are exiting from climate-exposed markets and raising premiums to extraordinary heights.[49]

It is not just homes that are at risk. According to First Street Foundation's October 2021 report, *Infrastructure on the Brink*, roughly twenty-five percent of U.S. infrastructure is at risk of becoming inoperable due to flood risk.[50] And a quarter of all critical infrastructure (36,000 facilities) faces increased flooding risk. Furthermore, First Street estimates that nearly a quarter of all roads are at risk of being unpassable, in addition to the fourteen percent of homes that face increased flooding risk.[51] Of course, new infrastructure (utilities, roads, and related support services) is expensive and must be planned for and put in place prior to retreat commencing—there is no "free adaptation" lunch. Some scholars and researchers now estimate that financing

45. U.S. GLOB. CHANGE RSCH. PROGRAM, FIFTH NATIONAL CLIMATE ASSESSMENT: REPORT IN BRIEF 46–47 (2023) [hereinafter NCA5 REPORT-IN-BRIEF], https://web.archive.org/web/20250630032633/https://nca2023.globalchange.gov/downloads/NCA5_Report-In-Brief.pdf [https://perma.cc/PCZ6-AP9N].

46. U.S. GLOB. CHANGE RSCH. PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT: REPORT-IN-BRIEF 55 (2018) [hereinafter NCA4 REPORT-IN-BRIEF], https://web.archive.org/web/20250630045331/https:/nca2018.globalchange.gov/downloads/NCA4_Report-in-Brief.pdf [https://perma.cc/5AG2-9W2G]; Alexa K. Jay et al., *Overview*, *in* NCA4 REPORT-IN-BRIEF, *supra*, at 55 ("Many millions of American live in coastal areas threatened by sea level rise; in all but the very lowest sea level rise projections, retreat will become an unavoidable option in some areas along the U.S. coastline.").

47. Jay, *supra* note 46, at 17.

> Without significant reductions in global greenhouse gas emissions and regional adaptation measures, many coastal regions will be transformed by the latter part of this century . . . . Even in a future with lower greenhouse gas emissions, many communities are expected to suffer financial impacts as chronic high-tide flooding leads to higher costs and lower property values.

Id. at 18.

48. CLIMATE CENT., OCEAN AT THE DOOR: NEW HOMES AND THE RISING SEA 2 (2019), https://ccentralassets.s3.amazonaws.com/pdfs/2019Zillow_report.pdf [https://perma.cc/98UN-VNM3].

49. Nevitt & Pappas, *supra* note 10, at 1614–17.

50. FIRST ST. FOUND., THE 3RD NATIONAL RISK ASSESSMENT: INFRASTRUCTURE ON THE BRINK 3 (2021), https://assets.firststreet.org/uploads/2021/09/The-3rd-National-Risk-Assessment-Infrastructure-on-the-Brink.pdf [https://perma.cc/HV8V-F6EF].

51. *Id.*

and investing in new infrastructure constitutes a significant hurdle that undermines any retreat effort.[52]

As governmental officials and policy planners adapt to climate change, they will struggle with applying antiquated planning models that fail to account for climate change. For example, "stationarity" is a key planning principle that relies upon historical environmental data to guide future infrastructure planning decisions.[53] At its core, stationarity assumes that natural systems fluctuate within a static envelope of variability.[54] But climate change is forcing us to rethink stationarity's core planning assumption and our reliance on historical environmental conditions. Indeed, the entire concept of stationarity may no longer be valid as we lack reliable historical data to plan for a highly variable, climate-destabilized future.[55]

Finally, retreat raises enormous equity and climate justice issues that can't be dismissed. The Fifth National Climate Assessment states that "federally funded opportunities remain untapped and inaccessible to overburdened and frontline communities."[56] Full-scale retreat is not seen as a viable adaptation option in wealthy areas such as New York City and Miami Beach. Major metropolitan areas already receive billions of dollars in federal disaster aid. Manhattan alone received $8.9 billion in federal aid as part of the federal government's response to Hurricane Sandy. In contrast, poorer coastal communities will be at the front lines of the retreat or reinvest calculus. This includes communities in the Southeast, such as Nag's Head, North Carolina, or Tybee Island, Georgia. And the lowest-income households are already the most vulnerable to climate disasters and have a higher evacuation rate than

52. *See, e.g.*, PETER PLASTRIK & JOHN CLEVELAND, INNOVATION NETWORK FOR CMTYS., CAN IT HAPPEN HERE? IMPROVING THE PROSPECT FOR MANAGED RETREAT BY US CITIES 35 (2019), https://adaptation.ei.columbia.edu/sites/default/files/content/Managed-Retreat-Report-March-2019.pdf [https://perma.cc/9EJR-Z45E].

53. P.C.D. Milly et al., *Stationarity Is Dead: Whither Water Management?*, 319 SCIENCE 573, 573–74 (2008).

54. *Id.*

55. *See id.*; *see also* J.B. Ruhl & Robin Kundis Craig, *4°C*, 106 MINN. L. REV. 191, 231–32, 239–44 (2021) (analyzing adaptation governance at 4°C); Robin Kundis Craig, *"Stationarity Is Dead"— Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV. ENV'T. L. REV. 9, 16 (2010) (adding to the collection of scholars proposing "successor regime[s] to stationarity"). For example, flooding in Texas during Hurricane Harvey and the recent Hill Country flood highlight that climate destabilization is already occurring—disrupting the assumption of stationarity. *See* Mark Nevitt, *Eight Takeaways from the Texas Flood Tragedy*, LAWFARE (July 28, 2025, 10:08 AM), https://www.lawfaremedia.org/article/eight-takeaways-from-the-texas-flood-tragedy [https://perma.cc/A2A4-35ML]; *NOAA Updates Texas Rainfall Frequency Values*, NAT'L OCEANIC ATMOSPHERIC ADMIN. (Sept. 27, 2018), https://www.noaa.gov/media-release/noaa-updates-texas-rainfall-frequency-values [https://perma.cc/9WZ6-NVWB].

56. Travis A. Dahl et al., *Adaptation*, *in* NCA5, *supra* note 26, at 31-1, 31-9.

wealthier households.[57] Any retreat program must take into account these historical inequities, build trust with the community, and go beyond shifting resources to the wealthiest communities—themes I turn to below.

B. KEY RETREAT AND ABANDONMENT TERMINOLOGY

In what follows, I highlight key terms in the retreat and abandonment discourse. How we talk about retreat can shape the legitimacy and efficacy of such strategies.[58]

1. Defining and Contextualizing Retreat and Abandonment

Adaptation is defined as "[t]he process of adjusting to an actual or expected environmental change and its effects in a way that seeks to moderate harm or exploit beneficial opportunities."[59] Fundamentally, government-led adaptation measures come in three forms: resistance (such as building sea walls and hardened infrastructure); accommodation (such as climate-informed building regulations); and retreat.[60] In the face of rising global emissions and growing climate impacts, communities are increasingly striving for resilience, defined as "[t]he ability to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions."[61]

Retreat can be characterized in two forms: managed and unmanaged.[62] Professor A.R. Siders defines managed retreat as "the planned, purposeful, coordinated movement of people and assets away from risk."[63] Managed retreat holds immense promise, and we should remove obstacles to embrace managed retreat wherever possible. While managed retreat has received increased attention as a valid adaptation strategy, significant hurdles remain to

57. Thomas Frank, *Census: Disasters Displaced More than 3M Americans in 2022*, E&E NEWS (Feb. 6, 2023, 6:36 AM), https://www.eenews.net/articles/census-disasters-displaced-more-than-3m-americans-in-2022 [https://perma.cc/EGG3-HDWC] ("Census figures show that 3.5 percent of the lowest-income households faced evacuation compared with 1.1 percent of households with income above $200,000.").

58. Within the scholarly literature there are also efforts to distinguish terms that can be used interchangeably. *See, e.g.*, Idowu Ajibade, Meghan Sulivan & Melissa Haeffner, *Why Climate Migration Is Not Managed Retreat: Six Justifications*, GLOB. ENV'T CHANGE 1–2 (Oct. 21, 2020), https://www.sciencedirect.com/science/article/pii/S0959378020307706?ref=pdf_download&fr=RR-2&rr=97c2b4651ed66075 [https://perma.cc/AWE5-QNS7].

59. NCA5 REPORT-IN-BRIEF, *supra* note 45, at 27; *see also* Katie Sinclair, *Water, Water Everywhere, Communities on the Brink: Retreat as a Climate Change Adaptation Strategy in the Face of Floods, Hurricanes, and Rising Seas*, 46 ECOLOGY L.Q. 259, 273–74 (2019).

60. *See* Nevitt, *Legal Crisis*, *supra* note 15, at 1057–59.

61. NCA5 REPORT-IN-BRIEF, *supra* note 45, at 27.

62. *See* Nevitt, *Legal Crisis*, *supra* note 15, at 1058–59.

63. Siders, *Managed Retreat in the United States*, *supra* note 42, at 216.

scaling managed retreat.[64] Today, retreat from climate-exposed areas occurs largely via *unmanaged retreat*, an ad hoc, inequitable, and reactive process that often takes place after disaster strikes.[65] Unmanaged retreat has emerged as the default adaptation approach—an ad hoc and deeply inequitable "strategy."

Abandonment falls under the unmanaged retreat umbrella.[66] Abandonment is defined as the act of abandoning—"to give up with the intent of never again claiming a right or interest in. . . . to withdraw from often in the face of danger or encroachment."[67] Abandonment may include yielding or surrendering to outside forces in what amounts to a gradual acceptance of climate realities. But people abandon their properties for a variety of reasons that may be driven by factors beyond their control. Abandonment may occur before disaster strikes, as homeowners face soaring insurance premiums. Or abandonment may follow from governmental disinvestment that further limits access and municipal services. The reasons for abandonment are complex and multivariate, but this much is clear: Abandonment is taking place in greater numbers and is increasingly viewed as a valid option in the face of climate risk, rising costs, and government disinvestment. Yet abandonment is a somewhat newer concept in the climate scholarly literature, and the term is wholly absent from the NCA's Report-in-Brief and Adaptation chapter.[68]

Abandonment may take the form of migration or displacement. Migration is the voluntary movement of people, often across political borders. Migration often takes place from rural areas to urban centers.[69] Displacement is the involuntary movement of people, a phenomenon taking place after a natural disaster strikes.[70] Displacement can take place directly or indirectly, with indirect displacement occurring due to rising housing costs, property taxes,

64. Managed retreat also takes time. The tribal community of Isle de Jean Charles retreated from low-lying Louisiana, a process that took fourteen years. *See, e.g.*, Tristan Baurick, *The Last Days of Isle de Jean Charles: A Louisiana Tribe's Struggle to Escape the Rising Sea*, NOLA.COM (Aug. 28, 2022), https://www.nola.com/news/environment/the-last-days-of-isle-de-jean-charles-a-louisiana-tribes-struggle-to-escape/article_70ac1746-1f22-11ed-bc68-3bde459eba68.html (on file with the *Iowa Law Review*).

65. Professor Ajibade argues that climate migration is *not* managed retreat. *See* Ajibade et al., *supra* note 58, at 1–2.

66. Involuntary retreat often occurs following an extreme weather event—such as Hurricane Sandy, Katrina, or Harvey—and a resident is forced to leave the area. This relocation can be a temporary or permanent move.

67. *Abandon*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/abandon [https://perma.cc/LDU7-2M9E]. Abandonment is also defined as "to give up with the intent of never again claiming a right or interest in." *Id.*

68. *See* NCA5 REPORT-IN-BRIEF, *supra* note 45.

69. Farhan H. Akhtar et al., *Climate Effects on US International Interests*, *in* NCA5, *supra* note 26, at 17-16.

70. Karla Mari McKanders, *Climate Migration*, A.B.A. (Oct. 30, 2024), https://www.americanbar.org/groups/crsj/resources/human-rights/2024-october/climate-migration [https://perma.cc/R4KH-LWQ8] (defining displacement resulting from climate change as occurring when individuals or groups are "compelled to leave their habitual place of residence or unable to return due to the adverse effects of climate change, environmental degradation, or natural disasters").

and insurance costs—factors linked with "climate gentrification."[71] Direct displacement often occurs following extreme weather events (flooding, wildfires, etc.) that destroy habitable property.

Finally, there is a growing body of literature that addresses the role that climate communications and labeling play in discussing retreat. Indeed, how we talk about retreat can influence and drive behavior. And each term discussed above has an emotional weight that can influence individual decisions on whether to stay or retreat.[72] For example, people associate retreat with loss and despair. Community relocation is increasingly used in place of managed retreat, as relocation lacks retreat's negative linguistic connotations.[73] And regardless of whether we label this retreat or relocation, this adaptation action will be especially challenging as people have an understandably strong attachment to their places and communities.[74]

2. The Typology of Retreat and Abandonment

Retreat can occur in either a voluntary or involuntary manner and can be characterized as either formal or informal. There are legal and policy challenges with each approach, but we should identify and remove barriers to empower communities to make the best adaptation choice. Ideally, laws and policies will empower communities to make the best adaptation choice for their respective community, unhindered by incomplete information or laws, doctrines, and policies that default to rebuilding in place following a disaster.

First, involuntary, formal retreat encompasses eminent domain actions where the government physically "take[s]" private property for public use under the Fifth Amendment.[75] Eminent domain is politically controversial, but communities are considering forced displacement via eminent domain as a valid prophylactic option that removes people out of harm's way before disaster strikes.[76] In doing so, the government can transform the property into climate buffer zones that safeguard the larger community from future harm. Governmental action that links the taking of the property to environmental restoration is likely to be upheld as a valid public use and a legitimate exercise

71. *See, e.g.*, WILLIAM BUTLER ET AL., FLA. STATE UNIV., ADDRESSING CLIMATE DRIVEN DISPLACEMENT: PLANNING FOR SEA LEVEL RISE IN FLORIDA'S COASTAL COMMUNITIES AND AFFORDABLE HOUSING IN INLAND COMMUNITIES IN THE FACE OF CLIMATE GENTRIFICATION 20–23 (2021).

72. *See, e.g.*, Bromhead, *supra* note 43 (stating that we should prefer terms like "community-led resettlement" over retreat as resettlement and relocation should focus more on new beginnings and opportunity and less on loss).

73. *Id.*

74. *Id.* Yet people are disproportionately moving to climate-exposed areas. In the past few years, some of the largest in-state migration has occurred in states and areas most exposed to climate change. *See, e.g.*, Volker C. Radeloff et al., *Rapid Growth of the US Wildland-Urban Interface Raises Wildfire Risk*, 115 PNAS 3314, 3316 (2018).

75. U.S. CONST. amend. V.

76. *See* Alexandra B. Klass, *Eminent Domain Law as Climate Policy*, 2020 WIS. L. REV. 49, 71–83.

of the government's Fifth Amendment authority.[77] Still, even a valid use of the takings power requires the governmental actor to pay just compensation to the property owner.[78] Nevertheless, in light of the political and resulting financial costs, eminent domain is a tool for only the most climate-exposed communities.

As such, governments cannot simply "eminent domain" their way out of the climate crisis. Strategic use of eminent domain may be valuable and necessary in certain communities. But widespread takings actions, beyond the problems outlined above, could come with serious equity concerns. Because of the just compensation requirement, poorer communities are potentially better candidates for eminent domain proceedings, raising novel environmental and climate justice issues.

Alternatively, involuntary, formal retreat may occur when a governmental entity deliberately disinvests from roads, services, or related infrastructure —an activity that implicates the regulatory takings doctrine.[79] As climate impacts grow, deliberate disinvestment may well be viewed by some communities as a pragmatic, fiscally responsible strategy that can help safeguard communities while also protecting emergency first responders. While not as intrusive as eminent domain proceedings, a deliberate disinvestment retreat strategy sends an important signal that retreat may be inevitable, as certain locations are not future growth and investment areas. And prospective property buyers interested in investing in the affected community will be on notice of future government investment (or lack thereof). Indeed, knowledge of a deliberate disinvestment plan can also be a factor in reasonable investment-backed expectations analysis, should a property owner allege that governmental inaction led to a regulatory taking.[80]

Second, formal, voluntary retreat is best exemplified by government-led buyout programs that incentivize people to sell their property in the face of climate hazards. New Jersey, which is home to four of the five most flood-prone counties in the United States,[81] is a leader in formalized, voluntary retreat via the innovative Blue Acres Buyout Program. Blue Acres has been aided by the Federal Emergency Management Agency's ("FEMA") Hazard Mitigation Grant Program and the U.S. Department of Housing and Urban Development's ("HUD") Community Development Block Grant Disaster

77. *See generally* Kelo v. City of New London, 545 U.S. 469 (2005).

78. U.S. CONST. amend. V.

79. *See* Penn Cent. Transp. Co. v. New York City, 438 U.S. 104, 124–25 (1978).

80. *See id.*; *see also* Thomas Ruppert, *Reasonable Investment-Backed Expectations: Should Notice of Rising Seas Lead to Falling Expectations for Coastal Property Purchasers?*, 26 J. LAND USE & ENV'T L. 239, 246, 257–60 (2011) [hereinafter Ruppert, *Investment-Backed Expectations*].

81. Susan Crawford, *New Jersey Is Updating Its Land Use Requirements to Incorporate Climate Risks*, MOVING DAY (Sept. 21, 2024), https://susanpcrawford.substack.com/p/new-jersey-is-updating-its-land-use [https://perma.cc/DT2K-DSKG].

Recovery program.[82] In 2017, Blue Acres expanded its reach to renters via a novel tenant relocation program.[83]

Despite the success of Blue Acres and other established voluntary retreat programs, many well-intentioned programs are plagued by delays, and there is growing evidence that voluntary buyout programs disproportionately benefit wealthier residents who are better resourced to navigate the reams of red tape associated with such programs.[84] Voluntary buyout programs are helpful but ultimately not the silver bullet to meet the climate challenge.[85]

Third, informal, involuntary retreat takes place via "shadow disinvestment" when state and local governments stop investing in infrastructure without following the prescribed disinvestment procedures. Such measures are involuntary in that the government is making the decision—oftentimes without public debate and comment—to halt investment in public infrastructure. Shadow disinvestment forces homeowners or renters to flee or fight (via litigation) as degrading infrastructure becomes nonfunctional—as roads will be washed out and the lights will turn off for good. Shadow disinvestment is more likely to result in an inverse condemnation claim where a property owner argues that the government's failure to follow the statutorily required procedures led to a compensable taking.[86] Shadow disinvestment takes place implicitly, often behind closed doors, and may result in litigation if the government does not follow the statutorily mandated procedures.[87] But challenging shadow disinvestment in a courtroom is predicated on knowing that it is occurring in the first place.

Indeed, shadow disinvestment's decision-making opacity undermines environmental justice principles of fair treatment and meaningful involvement.[88] Underserved, poorer communities are the most vulnerable to this retreat strategy, particularly as wealthy property owners have the resources and know-how to access information and file civil suit. Consider how shadow

82. KATIE SPIDALIERI, ISABELLE SMITH & JESSICA GRANNIS, GEO. CLIMATE CTR., MANAGING THE RETREAT FROM RISING SEAS 1 (2020), https://www.georgetownclimate.org/files/MRT/GCC_20_NewJersey-3web.pdf [https://perma.cc/3ZEG-FZ3V] (stating that Blue Acres secured $300 million in funding from these two programs in the aftermath of Hurricane Sandy).

83. *Id.* at 3.

84. James R. Elliott & Zheye Wang, *Managed Retreat: A Nationwide Study of the Local, Racially Segmented Resettlement of Homeowners from Rising Flood Risks*, ENV'T RSCH. LETTERS 8 (June 15, 2023), https://iopscience.iop.org/article/10.1088/1748-9326/acd654/pdf [https://perma.cc/Y7SQ-AN6C].

85. *See* Fanilla Cheng, *Is Compulsory Managed Retreat Our Future?*, NEW AM. (Nov. 17, 2021), https://www.newamerica.org/future-land-housing/briefs/is-compulsory-managed-retreat-our-future [https://perma.cc/DG5Q-P3ME].

86. *See* Jordan v. St. Johns County, 63 So. 3d 835, 837, 839 (Fla. Dist. Ct. App. 2011). Inverse condemnation is defined as "[a]n action brought by a property owner for compensation from a governmental entity that has taken the owner's property without bringing formal condemnation proceedings." *Inverse Condemnation*, BLACK'S LAW DICTIONARY (12th ed. 2024).

87. *See, e.g.*, *Jordan*, 63 So. 3d at 837; U.S. CONST. amend. V.

88. *See generally* Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 16, 1994).

disinvestment was attempted—and ultimately thwarted by wealthy homeowners—in Florida. In *Jordan v. St. Johns County*, a Florida county stopped maintaining a key coastal road, Old A1A, along the Florida coast.[89] St. Johns County failed to follow the prescribed road abandonment procedures, resulting in litigation. Before the case settled, the Florida court held that "[t]he County must provide a reasonable level of maintenance that affords meaningful access, unless or until the County formally abandons the road."[90] While *Jordan* has been critiqued as a nondecision decision with limited precedential value, this case nevertheless showcases how local government will short-circuit the road abandonment process. *Jordan* also highlights that wealthy homeowners will litigate any deprivation of their property rights with some modicum of success. One can envision state and local governments avoiding political accountability and preferring shadow disinvestment over more transparent, deliberate disinvestment measures.

Fourth, our national adaptation policy has defaulted to informal, voluntary retreat—what I refer to as "unmanaged retreat." Here, there is limited government involvement in the decision to retreat, and people make the independent decision to leave post-disaster. Sometimes we stay in place. Sometimes we retreat to other parts of the country. Most times, we simply shrug our collective shoulders and muddle our way through disaster after disaster. As discussed *infra* Part III, unmanaged retreat leads to a growing swath of legal and policy concerns when properties are abandoned.

Table 1. Typology of Retreat Quadrant

	Involuntary	**Voluntary**
Formal	Eminent Domain & Deliberate Disinvestment ["De Jure Displacement"]	Financial Buyouts ["Managed Retreat"]
Informal	Shadow Disinvestment ["De Facto Displacement"]	Unmanaged Retreat ["Abandonment'']

3. Climate Abandonment: A Form of Unmanaged Retreat

Under the umbrella of unmanaged retreat, citizens are independently choosing to leave their homes without government direction, funding, or strategy. In contrast to ex ante, government-led retreat, abandonment is likely to occur ex post, following disaster. Scholars now estimate that there is a tipping point for abandonment when a certain number of people decide to flee an area, leading to a cascade of abandonment.[91]

89. *Jordan*, 63 So. 3d at 837.

90. *Id.* at 838.

91. For a discussion of tipping points outside the climate context, see generally MALCOLM GLADWELL, THE TIPPING POINT: HOW LITTLE THINGS CAN MAKE A BIG DIFFERENCE (2002).

First Street Foundation helped coin the term Climate Abandonment Areas, which is defined as "locations that have lost population from 2000 [to] 2020 and can be directly attributed to climate change-related flood risk."[92] First Street finds a substantial threat to 14.6 million properties; however, only 8.7 million of them are listed under FEMA's Special Flood Hazard Areas designation.[93] This disparity, nearly 6 million homes, highlights that millions of property owners may have a false sense of security and not fully appreciate the ultimate climate risk that they are facing.[94] Indeed, several parts of the nation were once touted as climate havens, only to have this myth dispelled with significant flooding or other extreme weather events.[95] Climate Abandonment Areas have experienced enormous population loss in recent years, with one study estimating a cumulative net loss of 3.2 million people over a twenty-year period that is attributable to flooding.[96] Climate Abandonment Areas are growing in geographic size as extreme weather or climate anomalies become more common. But even as an area grows spatially, the overall area decreases in population. These areas are expected to decline by an additional sixteen percent (2.5 million people) due to flood risk.[97]

In sum, retreat and abandonment are now part of the adaptation lexicon in the United States. They are both viewed as bona fide adaptation options and an altogether rational response to climate change.[98] But what legal duties does the government owe to its citizenry when executing a retreat strategy? I turn to this question below, focusing on four core duties.

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92. Jeremy Porter, *Climate Abandonment Areas*, FIRST ST. (Dec. 18, 2023), https://firststreet.org/research-library/climate-abandonment-areas [https://perma.cc/S46R-BM2Q].

93. *See* FIRST ST. FOUND., THE FIRST NATIONAL FLOOD RISK ASSESSMENT 9 (2020), https://firststreet.org/research-library/the-first-national-flood-risk-assessment (on file with the *Iowa Law Review*).

94. *Id.*

95. Asheville, North Carolina, is one prominent example of an area that was once considered a climate haven, only to have the myth dispelled. Tim Robustelli & Yuliya Panfil, *Muddling the Message Around 'Climate Havens,'* BLOOMBERG (Oct. 31, 2024, 10:02 AM), https://www.bloomberg.com/news/articles/2024-10-31/in-asheville-and-beyond-a-muddled-message-around-climate-risks [https://perma.cc/9PWJ-4UXM].

96. CLIMATE ABANDONMENT AREAS, *supra* note 3, at 14.

97. *Id.* at 22.

98. While this paper focuses on abandonment within the United States, retreat, abandonment, and migration are taking place internationally and across political borders. According to the National Climate Assessment, the U.S. border will be impacted by unprecedented levels of cross-border migration as millions of Central Americans face drought, food insecurity, and extreme weather events that will exacerbate conflicts and lead to greater insecurity. Akhtar et al., *supra* note 69, at 17-1, 17-6. As asylum seekers make the difficult trip to the United States, federal courts have begun to wrestle with whether climate migrants possess a legally protected status. *See, e.g.*, Cruz Galicia v. Garland, 106 F.4th 141, 145–46 (1st Cir. 2024). Finally, several Small Island Developing States ("SIDS") in the Pacific are considering retreating from their homeland. Melissa Stewart, *Cascading Consequences of Sinking States*, 59 STAN. J. INT'L L. 131, 136–40 (2023); Mark Nevitt, *Climate Change and the Specter of Statelessness*, 35 GEO. ENVT'L L. REV. 331, 334 (2023).

II. RETREAT: GOVERNMENTAL DUTIES AND RESPONSIBILITIES

This Part describes the scope of four legal duties implicated when the government leads retreat efforts for communities at increased climate risk. These duties include the duty to repair and maintain infrastructure, the duty to upgrade infrastructure, the duty to rescue, and the duty to provide electrical and utility service. The scope of these duties is largely determined by state common law doctrines and statutes that examine the contours of each duty and are further circumscribed by regulatory procedures governing disinvestment.

A. DUTY TO MAINTAIN AND REPAIR: LESSONS FROM FLORIDA AND NORTH CAROLINA

Understanding the legal duties associated with retreat begins with understanding the scope of the duty to maintain and repair. This duty might include maintaining existing roads, levees, dams, or other infrastructure vulnerable to climate impacts. In the face of rising costs to upkeep infrastructure, some states and localities have halted maintenance on coastal roads, leading to takings or tort-based negligence challenges.[99]

The Fifth Amendment states that "nor shall private property be taken for public use, without just compensation."[100] The Fifth Amendment's protections against the government taking private property have been incorporated to encompass state and local actions affecting private property owners.[101] Takings claims have been expanded to encompass both physical takings and regulatory takings that go "too far" in affecting private property rights.[102] The Supreme Court in *Kelo v. City of New London* interpreted "public use" broadly to include measures that further economic development.[103] *Kelo*'s expansive definition of public use leaves little doubt that governmental takings of private property for environmental reasons are valid. While *Kelo*'s broad conception of public use may prove useful in eminent domain proceedings, governmental officials still must pay just compensation to affected property owners.[104]

As a general matter, takings issues traditionally arise from governmental action.[105] But takings challenges are starting to arise from governmental inaction as plaintiffs assert that the government has an affirmative duty to

99. *See* U.S. CONST. amend. V. There are also "takings" clauses in state constitutions, which provide an independent basis for state and local liability. For example, Connecticut's constitution states "[t]he property of no person shall be taken for public use, without just compensation therefor." CONN. CONST. art. I, § 11.

100. U.S. CONST. amend. V.

101. Chi., Burlington & Quincy R.R. Co. v. Chicago, 166 U.S. 226, 241 (1897).

102. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415–16 (1922).

103. Kelo v. City of New London, 545 U.S. 469, 477, 489–90 (2005).

104. Disputes over what constitutes just compensation are often contentious. *See, e.g.*, Borough of Harvey Cedars v. Karan, 70 A.3d 524, 526–27 (N.J. 2013) (holding that the plaintiffs were only entitled to reasonably calculable, non-conjectural compensation due to the protective effects of a new dune that shielded the owners from climate impacts).

105. *See* U.S. CONST. amend. V.

maintain, repair, and upgrade infrastructure, and the failure to take such action is not discretionary.[106] Beyond takings challenges, negligence claims may also follow when infrastructure is no longer maintained.[107] The two cases below highlight how two state courts have wrestled with applying this duty in the context of infrastructure repair along the coast.

1. *Jordan v. St. Johns County*: Shining Light on Shadow Disinvestment

To understand how courts wrestle with the duty to repair, consider the case of *Jordan v. St. Johns County*. This case represents informal, involuntary retreat. As previously noted, in *Jordan*, wealthy residents of Summer Haven sued St. Johns County, arguing that the County stopped maintaining Old A1A, a key access road.[108] Furthermore, St. Johns County failed to engage the public about its decision and failed to follow the statutorily mandated road abandonment procedures when it failed to maintain Old A1A. The County's decision to short-circuit the road abandonment process is a classic example of shadow disinvestment, which should be disfavored.[109]

Still, one can sympathize with the municipal leaders of St. Johns County. The County faced a fiscal dilemma as the cost of maintaining Old A1A had increased dramatically in recent years, as recurrent flooding continued to wash the road away.[110] "[B]etween 2000 and 2005, the county spent an average of $244,305 per year, per mile, to maintain Old A1A, as opposed to an average of $9,656 per year, per mile, for all other county roads."[111] The plaintiffs argued that the County did not follow the statutorily mandated abandonment procedures when it stopped repairing and maintaining Old A1A.[112] Further, the plaintiffs argued that the County's refusal to follow the abandonment procedures amounted to a de facto abandonment of the road and an inverse condemnation.[113] The County argued that the decision over what constituted reasonable road maintenance was purely discretionary.[114] The Florida court stated that "[t]he County must provide a *reasonable level of maintenance* that affords meaningful access, unless or until the County formally abandons the road."[115] It stated:

106. *See, e.g.*, Jordan v. St. Johns County, 63 So. 3d 835, 837 (Fla. Dist. Ct. App. 2011).

107. *Managed Retreat Toolkit: Infrastructure Disinvestment*, *supra* note 14.

108. Old A1A was continuously washed away by storms, inflicting enormous maintenance costs on the County. *Jordan*, 63 So. 3d at 836–37.

109. *Id.* at 838–39; *see* Nevitt, *Legal Crisis*, *supra* note 15, at 1098–100.

110. Thomas Ruppert, *Castles—and Roads—in the Sand: Do All Roads Lead to a "Taking"?*, 48 ENV'T L. REP. NEWS & ANALYSIS 10914, 10916 (2018) [hereinafter, Ruppert, *Castles and Roads*].

111. *Id.*

112. *See Jordan*, 63 So. 3d at 836–37.

113. *See id.*

114. *Id.* at 837.

115. *Id.* at 838 (emphasis added).

> We hold that the County has a duty to reasonably maintain Old A1A as long as it is a public road dedicated to the public use. We do not hold that the County has the duty to maintain the road in a particular manner or at a particular level of accessibility. However, the County's discretion is not absolute. The County must provide a reasonable level of maintenance that affords meaningful access, unless or until the County formally abandons the road.[116]

Jordan was in many ways a nondecision decision, as the court remanded the case back to the lower court for further fact-finding, and the litigants ultimately settled with the County. And the court backed away from imposing an affirmative duty to maintain infrastructure to a judicially mandated standard.[117] Still, *Jordan* serves as a rare case that shines light on how shadow disinvestment works in practice and the steps governmental entities may take to short-circuit decision-making when considering retreat. *Jordan* also demonstrates how courts wrestle with the proper level of infrastructure maintenance while upholding the importance of following procedures prior to halting maintenance on a key road. Procedurally, disinvestment requires providing proper notice to affected residents before suspending city services.

As a somewhat unique case addressing the judiciary's role in examining shadow disinvestment, courts outside of Florida have cited *Jordan* in recent years as they navigate similar fact patterns.[118] At a minimum, *Jordan* highlights the need for municipalities to follow proper processes before halting repair services. And governments will remain exposed to litigation risk when pursuing any disinvestment strategy, particularly if the government fails to follow the requisite procedures. But one can imagine this case of disinvestment never being brought to light if such a tactic were employed in poorer, underserved communities.

2. *Kirkpatrick v. Town of Nags Head*: Deliberate Disinvestment Meets Discretionary Duties

In *Kirkpatrick v. Town of Nags Head,* a property owner along the North Carolina coast challenged the town's decision to stop rebuilding a road that was repeatedly washed away by storms: Plaintiff Kirkpatrick purchased a home in 1983 that "was located in the second row of houses" removed from the Atlantic Ocean, "separated . . . by a paved right-of-way known as Surfside Drive, a row of oceanfront homes, and a dune line."[119] Surfside Drive and the

116. *Id.*

117. *See also* Bailey v. Preserve Rural Rds. of Madison Cnty., Inc., 394 S.W.3d 350, 361 (Ky. 2011) ("We find no authority . . . that the county's refusal to maintain a road in good repair is an unconstitutional infringement upon a landowner's right of access.").

118. Litz v. Md. Dep't of the Env't, 131 A.3d 923, 932 (Md. 2016) (citing *Jordan*, 63 So. 3d at 836–39).

119. Kirkpatrick v. Town of Nags Head, 713 S.E.2d 151, 153 (N.C. Ct. App. 2011).

original oceanfront homes were washed away by the Atlantic Ocean when Hurricane Isabel in 2003 "destroyed '[m]ost[,] if not all[,] of the paved surface of the Surfside Drive right-of-way in the vicinity of the Plaintiffs' property.'"[120] The town of Nags Head attempted to save the road through a series of improvements "including the installation of a protective berm and . . . a gravel roadbed."[121] But even these measures were washed away the following year after a nor'easter struck North Carolina.[122]

Following the storm, Nags Head "made a conscious decision to refrain from making any additional effort to rebuild, repair, or restore [Surfside] Drive" while also creating permanent barricades to stop vehicles from traveling along Surfside Drive.[123] In the absence of any repair or investment, Surfside Drive deteriorated and completely disappeared by 2010.[124] While Kirkpatrick was able to access the property via other means—"driving on the beach or by parking in a public right-of-way near the property and walking to the house"—reaching the property by vehicle on Surfside Drive was no longer viable.[125]

Throughout this time, Kirkpatrick rented the house to tourists visiting the coast, but his rental income suffered due to the property's loss of access.[126] Kirkpatrick sought economic damages for lost rental income under negligence and inverse condemnation theories.[127] Specifically, Kirkpatrick asserted that the Nags Head government was liable for economic injuries that followed the decision to halt maintenance on the road.[128] Kirkpatrick alleged that Nags Head's negligence led to a loss of rental revenue as he spent significant sums of money attempting to "establish alternate access to the [p]roperty."[129]

The court disagreed with the plaintiff's arguments, highlighting that Nags Head lacked an affirmative, *ministerial* duty to repair the road.[130] According to the court, Nags Head's decision whether to repair or not repair the road was entirely discretionary. In the court's logic, imposing a duty to repair on the town would "depriv[e] a municipality . . . of its discretion to determine the identity of the streets upon which travel should be allowed at all."[131] In refusing to find a clear statutory mandate to repair Surfside Drive, the court held:

120. *Id.* (alterations in original).
121. *Id.*
122. *Id.*
123. *Id.* (alteration in original).
124. *Id.*
125. *Id.* at 153–54.
126. *Id.*
127. *Id.* at 154.
128. *Id.* (citing N.C. GEN. STAT. § 160A-296(a)).
129. *Id.*
130. *Id.* at 157.
131. *Id.* at 158 ("Put another way, accepting Plaintiffs' argument would effectively require a municipality to compensate a landowner or other person adversely affected by a street or roadway closure decision for economic losses arising from the closure of the road in question.").

> [W]e conclude that the extent to which particular municipal streets and roads are kept open for use by members of the public, such as Plaintiffs, is a governmental function and that governmental immunity is available to municipalities as a defense to damage claims arising from such discretionary road closure decisions.[132]

In reaching this conclusion, the court looked at the functions performed by the municipality, which can be classified as either ministerial or governmental (i.e., discretionary).[133] Characterizing duties as discretionary provides the government with immunity that shields municipalities from liability.[134] While the court highlighted the discretionary nature of the duty, the court clarified that governmental immunity does not apply "as a defense to any claim arising from personal injuries or property damage sustained as a result of a defective condition in the maintenance of that street or road."[135] The court also rejected the proposition that municipalities would be required to compensate anyone economically affected directly by a street or roadway closure.[136]

How do we make sense of *Kirkpatrick*? At least one state court identifies the failure to repair as a discretionary duty that shields the government from liability. Yet each state defines what constitutes a discretionary or ministerial decision differently, making this a difficult question of state law requiring a case-by-case and state-by-state analysis.

Further, climate impacts blur the line between ministerial and discretionary duties.[137] For example, climate-driven sea level rise may make a once-usable road unusable. If a state links ministerial duties to road functionality, climate change will increase the scope of ministerial duties, leading to even greater litigation risk for governmental entities. Legislators should consider climate impacts in defining ministerial duties to ensure that governments are responsive to climate impacts without causing massive legal exposure.

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132. *Id.*

133. *Id.* at 156.

134. *Id.* at 156–57 (citing Sisk v. City of Greensboro, 645 S.E.2d 176, 179 (N.C. Ct. App. 2007)).

135. *Id.* at 158 ("As a result of the fact that Plaintiffs have not alleged or forecast evidence tending to show the existence of any specific defect in Surfside Drive that caused the injuries of which they complain other than Defendant's decision to refrain from conducting further maintenance on Surfside Drive and to close Surfside Drive to vehicular traffic in the area adjacent to Plaintiffs' property, we conclude . . . that governmental immunity was, as a general proposition, available to Defendant as a defense to Plaintiffs' claim . . . .").

136. *See id.* at 157–58.

137. States also define these terms differently. For example, Florida refers to discretionary decisions as planning or policy level decisions while ministerial decisions are referred to as operational decisions. *See, e.g.*, Kaisner v. Kolb, 543 So. 2d 732, 737 (Fla. 1989); THOMAS RUPPERT, ERIN L. DEADY, JASON EVANS & CRYSTAL GOODISON, LEGAL ISSUES WHEN MANAGING PUBLIC ROADS AFFECTED BY SEA LEVEL RISE: FLORIDA 13–15 (2019) [hereinafter RUPPERT, MANAGING PUBLIC ROADS], https://www.stetson.edu/other/iwer/media/Legal%20Issues%20When%20Managing%20Public%20Roads.pdf [https://perma.cc/3W4K-TWPQ].

Indeed, the court's discussion of discretionary versus ministerial duties is one of growing importance as courts navigate the scope of the sovereign immunity doctrine for governmental maintenance, repair, and infrastructure upgrade decisions.[138] While the precise line of these duties is not always clear, understanding what, precisely, is a discretionary duty is critical for future adaptation planning and decision-making. Conflating a ministerial duty with a discretionary duty could result in regulatory takings challenges, costing the government massive amounts of money.

In response to inevitable challenges to governmental decision-making, some state legislatures may desire to expand the scope of discretionary functions to include a broader swath of activities. Such a statutory expansion may facilitate retreat from climate-exposed areas while minimizing governmental risk. Although expanding the definition of discretionary functions is sure to meet resistance from some corners, governmental officials will require the full menu of tools—and legal protections—to manage retreat from climate-exposed areas and coastal zones. Regardless of the choices made, governmental officials should strive for definitional clarity and transparency in their decision-making to avoid shadow disinvestment at all costs.

B. THE DUTY TO UPGRADE IN THE FACE OF A "KNOWN RISK"

In addition to the duty to repair and maintain, state courts have begun to wrestle with whether there is an affirmative duty to upgrade public infrastructure in the face of a known risk. For example, a municipality might take a sensible adaptation measure such as building a sea wall on public property to protect homeowners and the community. The sea wall's design standards are built to a certain standard that is informed by stationarity planning. But climate science continues to advance, increasing our collective understanding of what adaptation measures are needed to account for the uptick in extreme weather, storm surge, and other climate impacts. Infrastructure that was once adequate for a more stable "Earth 1.0"[139] will prove inadequate for a climate-destabilized "Earth 2.0."[140] How should governments respond to this new climate knowledge?[141] And does awareness in the face of a known risk transform the governmental duties owed to citizens?

138. *Kirkpatrick*, 713 S.E.2d at 156.

139. Nevitt, *Legal Crisis*, *supra* note 15, at 1054.

140. *Id.* at 1054–55.

141. "New knowledge" can serve as a regulatory takings defense. In *Lucas v. South Carolina Coastal Council*, the Court stated, "[t]he fact that a particular use has long been engaged in by similarly situated owners ordinarily imports a lack of any common-law prohibition []though changed circumstances or new knowledge may make what was previously permissible no longer so." Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1031 (1992).

As a general matter, "failure to act cannot be the basis of a taking claim."[142] But a local government may still be liable for tort and negligence failures if it fails to take certain steps in the face of a specific and well-understood danger.[143] In *City of El Paso v. Ramirez*, the Texas state court addressed the City of El Paso's duties that it owed to its citizens when the City failed to take measures to prevent overflow from city-owned retention ponds.[144] The court dismissed the takings claim, but found that the City was aware of the potential for overflow from the retention ponds, and the City of El Paso failed to take adequate measures to prevent overflow.[145] The court found that the City's failure to take steps to mitigate the overflow constituted negligence.[146]

Although *City of El Paso* is a state case with limited precedential value outside Texas, it demonstrates that some judges will find governmental negligence for failure to act in the face of a specified, known risk. Since *City of El Paso* was decided over a decade ago, our collective wisdom about climate change and its associated impacts has only grown. *City of El Paso* emphasized that the overflow risk was well understood, reaffirming the linkage between environmental risk and governmental knowledge.[147]

City of El Paso further highlights an important distinction between a duty to maintain and a duty to upgrade. As sea levels rise and climate impacts are more broadly felt, the line between ministerial *repair* duties and discretionary *upgrade* duties has become increasingly blurred. Governmental entities may "be liable for injuries and damages resulting from conditions created by sea-level rise and coastal flooding if that hazard can at least partially be traced to a failure to maintain the existing infrastructure."[148]

Arreola v. County of Monterey offers another example of how a state court in California wrestled with lawsuits against a local government in the face of a known risk.[149] In *Arreola*, Monterey County officials were aware that a levee built by the government was in danger of failing but failed to take any follow-up action. Plaintiff Arreola sued Monterey when the levee breached and floodwaters damaged their property.[150] The court held that it is enough "to support liability in inverse condemnation . . . to show that the entity was *aware*

142. ROBERT MELTZ, CONG. RSCH. SERV., R42613, CLIMATE CHANGE AND EXISTING LAW: A SURVEY OF LEGAL ISSUES PAST, PRESENT, AND FUTURE 28 (2014). *But see* Christopher Serkin, *Passive Takings: The State's Affirmative Duty to Protect Property*, 113 MICH. L. REV. 345, 372–77 (2014).

143. *See* MELTZ, *supra* note 142.

144. *See generally* City of El Paso v. Ramirez, 349 S.W.3d 181 (Tex. App. 2011).

145. *Id.* at 187.

146. *Id. But see* Coleman v. Portage Cnty. Eng'r, 975 N.E.2d 952, 958–60 (Ohio 2012) (discerning between the failure to upgrade and the failure to maintain, and finding that the government is entitled for immunity for upgrade decisions).

147. *Ramirez*, 349 S.W.3d at 187.

148. RUPPERT, MANAGING PUBLIC ROADS, *supra* note 137, at 13.

149. Arreola v. County of Monterey, 122 Cal. Rptr. 2d 38, 40 (Ct. App. 2002).

150. *Id.* at 44–45.

of the risk posed by its public improvement and deliberately chose a course of action—or inaction—in the face of that known risk."[151]

To be sure, *Arreola* is a state appellate case in California. But *Arreola* suggests that the duty to upkeep, maintain, and repair public infrastructure is an ongoing duty in the face of a known risk.[152] The government's legal responsibility may not cease when the infrastructure project is complete. The court's willingness to impose legal liability for governmental inaction could further frustrate retreat efforts while also disincentivizing initial investments in infrastructure projects.[153]

Discerning what, precisely, is a required duty and what is an optional government duty is a question of state law. State legislators will struggle with whether the duty to repair encompasses upgrading roads that were once safe and are now exposed to increased climate hazards. Coastal erosion and recurrent flooding may require governmental entities to raise roads, increase their permeable surfaces, or make other "upgrades" that are necessary to keep the road functional. Courts and legislatures alike will have to wrestle with defining ministerial and discretionary duties in the face of climate impacts. Failure to define these duties with precision creates considerable uncertainty and exposes governmental action to litigation risk.

C. THE DUTY TO RESCUE AND PROVIDE EMERGENCY SERVICES

As state and local governments consider climate change's impact on existing legal duties, the level of provision of emergency services is increasingly part of the adaptation and disaster planning calculus. Historically, courts have not imposed an affirmative legal obligation to rescue communities during an extreme weather event.[154] There is, of course, understandable pressure to respond to the disaster as it occurs and during recovery efforts. But climate change is stressing and testing the provision of emergency services. And emergency first responders are increasingly placing themselves in danger as they respond to climate-destabilizing weather events—witness the recent death of eight firefighters in California.[155] As a matter of substantive due process, governmental officials at all levels do not have a legal duty to rescue their citizens unless the government was responsible for and caused the

151. *Id.* at 55 (emphasis added).

152. *Id.* at 63 (finding that State had "a duty to avoid obstructing escaping floodwater, regardless of the cause of the flood").

153. *See also* Nevitt, *Legal Crisis*, *supra* note 15, at 1103–04.

154. *Cf.* DeShaney v. Winnebago Cnty. Dep't of Soc. Servs., 489 U.S. 189, 201–03 (1989) (rejecting the claim that the State had a constitutional duty to protect a son against his father's violence); *see also* Carlos Martín, Carolyn Kousky, Manann Donoghoe & Karina French, *Four Principles for Reforming US Disaster Policy*, BROOKINGS (May 25, 2023), https://www.brookings.edu/articles/four-principles-for-reforming-us-disaster-policy [https://perma.cc/L5DW-P8L4].

155. *See* Ravani & Hernandez, *supra* note 29.

underlying danger.[156] This potential legal modification is known as the "danger creation" exception.[157]

The government's central role in energy policy and fossil fuel extraction potentially modifies the underlying duties owed to its citizens.[158] After all, federal and state governments lease enormous swaths of public lands to fossil fuel companies. And since 2009, the Environmental Protection Agency ("EPA") has acknowledged that greenhouse gases endanger human life and safety.[159] Although this is an undertheorized area of the law, plaintiffs have argued that the government's role in fossil fuel extraction imposes an affirmative, substantive due process duty on the government.[160]

Consider a recent Ninth Circuit case that addressed the contours of the duty to rescue in the context of deliberate governmental indifference. In *Penilla v. City of Huntington Park*, the descendants of an individual who died in police custody sued the City of Huntington Park, alleging that the police placed the deceased "Penilla in danger in deliberate indifference to his medical needs."[161] Two officers responded to a 911 call and "assisted" Penilla by responding to the emergency call and moving Penilla into his house and abandoning him soon thereafter. The officers subsequently cancelled the request for paramedics, despite Penilla's precarious medical condition.[162]

Despite finding Penilla to be in need of medical attention prior to the City's emergency response, the Ninth Circuit found that the officers took "affirmative actions that significantly increased the risk facing Penilla."[163] The Ninth Circuit held that the officers were not entitled to qualified immunity as the officers "made it impossible for anyone to provide emergency medical care to Penilla."[164] Although *Penilla* is a § 1983 civil rights claim, the danger creation exception is inextricably linked with deliberate governmental indifference, as the danger creation exception applies when government "conduct places a person in peril in deliberate indifference to their safety."[165]

156. *DeShaney*, 489 U.S. at 194–95. These are referred to as the "danger creation" or the "special relationship" exception. *See also* Juliana v. United States, 217 F. Supp. 3d 1224, 1251–52 (D. Or. 2016).

157. *See Juliana*, 217 F. Supp. 3d at 1252.

158. *See id.*

159. ENV'T PROT. AGENCY, EPA-HQ-OAR-2009-0171, EPA'S DENIAL OF THE PETITIONS TO RECONSIDER THE ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT 7 (2009), https://digital.library.unt.edu/ark:/67531/metadc226732/m2/1/high_res_d/response-decision.pdf [https://perma.cc/KR75-NEXF].

160. *See Juliana*, 217 F. Supp. 3d at 1252.

161. Penilla v. City of Huntington Park, 115 F.3d 707, 709 (9th Cir. 1997).

162. *Id.* at 710.

163. *Id.*

164. *Id.*

165. *Id.* at 709.

The deliberate indifference standard, if applied more broadly, has implications for climate adaptation efforts in the face of known climate risk.[166] Climate attribution science has made significant advances, demonstrating with remarkable precision the relationship between human activity, GHG emissions, and extreme weather events; likewise, better climate modeling clarifies where housing should be built and where infrastructure investments should and should not be made.[167] If the government builds in climate-exposed areas, does that equate to deliberate indifference? If a local government is aware of climate impacts to infrastructure and fails to act, does this meet the standard for deliberate indifference, thus imposing legal liability for failure to act? Although it is beyond this Article's scope to fully address the broad normative contours of the duty to rescue's exception, climate change will stress and test the application of the deliberate indifference and danger creation standards, increasing governmental exposure.

D. THE DUTY TO SERVE: SUSPENSION OF UTILITIES AND RELATED SERVICE

Finally, the duty to serve is implicated when a governmental or quasi-governmental entity (such as a regulated public utility) halts the provision of nondiscriminatory services.[168] The duty to serve defines the baseline for the provision of a host of services such as electricity, water, and physical infrastructure.[169] The duty could feasibly encompass cessation of public utility services from climate-exposed coastal zones as part of a broader retreat strategy. The duty to serve can include water, sewage, electricity, or other related services. The duty to serve includes both "the duty to interconnect and extend service if requested" as well as continue to provide service once it has commenced.[170] Once a utility service has been put in place, there are limited exceptions when a regulated monopoly utility service may eliminate service to homeowners and businesses.[171] State law governs the precise scope of the duty to serve, and the governing rules are somewhat analogous to decisions to abandon roads.[172]

Although it is beyond the scope of this Article to comprehensively address evolving conceptions of the duty to serve, consider how the duty to

166. Michael Burger, Jessica Wentz & Radley Horton, *The Law and Science of Climate Change Attribution*, 51 ENV'T L. REP. 10646, 10646–50 (2021).

167. *Id.*

168. *See* Brennan, *supra* note 38, at 101–04.

169. Rossi & Panfil, *supra* note 38, at 1142; Heather Payne, *The Natural Gas Paradox: Shutting Down a System Designed to Operate Forever*, 80 MD. L. REV. 693, 703, 736 (2021).

170. Jim Rossi, *Universal Service in Competitive Retail Electric Power Markets: Whither the Duty to Serve?*, 21 ENERGY L.J. 27, 29 (2000).

171. *Id.* at 29–44.

172. *See* Rossi & Panfil, *supra* note 38, at 1153–54 (discussing a typology to analyze duty to serve obligations); Alexandra Klass, Joshua Macey, Shelley Welton & Hannah Wiseman, *Grid Reliability Through Clean Energy*, 74 STAN. L. REV. 969, 977–79 (2022) (discussing the relevant actors in the energy sphere and their respective roles).

provide service applies in Florida, a state at the leading edge of retreat decisions and a state uniquely vulnerable to climate impacts. In Florida, public utility services may be lawfully discontinued, but only after two requirements are met. First, the decision to halt services must follow formal proceedings where there is an opportunity for comment and input from the public.[173] This requirement helps ensure that service reductions and eliminations are carefully considered—a requirement that should help dissuade shadow disinvestment in services. Second, the public service provider halting services must demonstrate that a reduction or suspension of services is economically required.[174] Any governmental-led retreat effort must consult relevant state law and procedures before shutting off governmental services. Eliminating service is, admittedly, a harsh decision, but retreat will demand tough political choices to safeguard the broader community. Any service elimination should be made openly, transparently, and following the requisite procedures to avoid the challenges associated with shadow service disinvestment.

E. SOVEREIGN IMMUNITY, ACTS OF GOD, AND GOVERNMENTAL DEFENSES

In what follows, I highlight two central defenses available to governmental entities as they understand their legal exposure under the four duties. Central to this understanding is the long-standing doctrine of sovereign immunity, which shields the government from lawsuits unless there has been an express legislative waiver addressing a ministerial duty.[175] For example, under the Flood Control Act, Congress has shielded the federal government from liability arising "for any damage from or by floods or flood waters at any place."[176] Although the Flood Control Act has halted many lawsuits against the federal government, this statutory shield is not absolute. Indeed, courts have not given governmental entities a legal blank check in flood control decision-making.[177] And states and municipalities are still responsible for upgrading and repairing much of the nation's infrastructure. Therefore, discerning the scope of the sovereign immunity defense becomes a question of state and federal law, and deciphering whether a governmental duty is either ministerial (required) or discretionary (optional).[178]

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173. *See, e.g.*, CITY OF CORAL GABLES, LEGAL CONSIDERATIONS SURROUNDING ADAPTATION TO THE THREAT OF SEA LEVEL RISE 59–61 (2016).

174. *Id.*

175. The discussion of ministerial versus discretionary function dates back to the nation's founding and the concept of judicial review. *See* Marbury v. Madison, 5 U.S. (1 Cranch) 137, 165–66, 177 (1803). For a critique of the doctrine of sovereign immunity, see generally Erwin Chemerinsky, *Against Sovereign Immunity*, 53 STAN. L. REV. 1201 (2001).

176. Flood Control Act, 33 U.S.C. § 702c. *But see* Federal Tort Claims Act, 28 U.S.C. §§ 2674, 2680 (waiving sovereign immunity for the U.S. government under certain circumstances).

177. *See* Ark. Game & Fish Comm'n v. United States, 568 U.S. 23, 26–27 (2012).

178. *See, e.g.*, Jones et al., *supra* note 30, at 82–98.

1. Sovereign Immunity: Distinguishing Between Ministerial and Discretionary Duty

First, a local government could defend its decision to retreat from a community by invoking the sovereign immunity doctrine. The sovereign immunity doctrine provides a protective, legal shield that safeguards federal, state, county, and municipal governments from tort liability when making discretionary or policy-related decisions. A government might invoke sovereign immunity to dispose of a lawsuit claiming that it had failed to perform a duty. In determining whether the government has sovereign immunity regarding (non)performance of a duty, state courts will ascertain whether the underlying activity is classified as ministerial or discretionary.

State courts will often look to whether a governmental function—such as whether there is an affirmative duty to maintain a road—is ministerial (required) or purely discretionary (not required).[179] Ministerial acts require the execution of a prescribed duty under set conditions.[180] While each state defines ministerial acts somewhat differently, as a general matter, governmental entities enjoy sovereign immunity and protection from lawsuit when taking certain discretionary acts.[181]

What about road upgrades—how should this be classified? State courts in Ohio and Florida have held that upgrades and improvements on existing roadways amount to discretionary decisions, thus absolving the government of all responsibility.[182] But neither case addressed the role of climate change and other environmental factors in its analysis. Deciphering the precise scope of the government's immunity is particularly important for discerning where there is an affirmative duty to maintain or a discretionary duty to upgrade. Consider *Milton v. United States*, a case addressing the potential liability of the U.S. Army Corps of Engineers during Hurricane Harvey.[183]

Milton v. United States highlights the complexities of applying the sovereign immunity doctrine when the government intervenes during an extreme weather event.[184] Property owners downstream from flood control reservoirs in Houston sued the U.S. Army Corps of Engineers ("Corps"), alleging a Fifth Amendment takings claim. The property owners alleged that the Corps' decision to open nearby flood reservoir gates during Hurricane Harvey released massive volumes of water, causing damage to their property.[185]

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179. *See, e.g.*, Banks v. Happoldt, 608 S.E.2d 741, 744–45 (Ga. Ct. App. 2004).

180. *Id.*

181. *See* Jones et al., *supra* note 30, at 85–97.

182. *See* Coleman v. Portage Cnty. Eng'r, 975 N.E.2d 952, 959–60 (Ohio 2012) (discerning between the failure to upgrade and the failure to maintain, and finding that the former is entitled to immunity); Dep't of Transp. v. Neilson, 419 So. 2d 1071, 1077 (Fla. 1982).

183. *See also* Kirkpatrick v. Town of Nags Head, 713 S.E.2d 151, 158 (N.C. Ct. App. 2011) (describing discretionary duties as applied to a duty to maintain and repair).

184. Milton v. United States, 36 F.4th 1154, 1158 (Fed. Cir. 2022).

185. *Id.*

While the U.S. Court of Appeals for the Federal Circuit ultimately remanded the case back to the lower court, the court seemed receptive to the argument that a specific governmental flood control intervention during an extreme weather event could constitute a taking. The court first found that the government was not immune from takings claims, stating that the Tucker Act waived sovereign immunity for "any claim against the United States founded either upon the Constitution, or . . . cases not sounding in tort."[186] Second, the court held that the property owners had a property interest in a flowage easement, and an extreme weather event—Hurricane Harvey—did not preclude property owners from possessing a cognizable property interest.[187] Third, the court noted that there is no "general police power exception to property rights."[188] Citing to *Lucas v. South Carolina Coastal Council*, the court noted that the Supreme Court has already rejected the notion that "private property is subject to 'unbridled, uncompensated qualification under the police power.'"[189] Finally, the court found that the doctrine of necessity was not relevant to whether there was a property interest, as necessity is a potential defense to a takings claim.[190] The court reversed the decision of the Court of Federal Claims and remanded the case to address whether the property had been taken.[191]

Milton is a case that originated from an extreme weather event—a type of weather event that is poised to increase in intensity and frequency in the face of climate change.[192] Extreme weather events will also force governmental officials to make split-second decisions to control nature—are such decisions cognizable causes of action?

Perhaps. But climate impacts are further obfuscating the line between ministerial maintenance and discretionary upgrades. What was once an optional upgrade may be a required repair necessary to provide equitable access to residents. Consider an instance where sea level rise projections forecast that a road must be elevated to ensure its continual functionality and operation. Does this elevation amount to required maintenance, or is this more properly characterized as a discretionary upgrade? As governments seek to keep roads operational and are forced to make expensive climate resiliency investments to safeguard access, some actions that were once characterized as upgrades

186. *Id.* at 1160.

187. *Id.* at 1161.

188. *Id.*

189. *Id.* at 1162 (quoting Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1014 (1992)).

190. *Id.*

191. *Id.* at 1163. The court outlined four questions for the court to consider as part of its taking analysis: "(1) whether Appellants have shown that a temporary taking occurred[;] . . . (2) whether Appellants have shown that a permanent taking occurred; (3) whether Appellants have established causation when considering 'the impact of the entirety of government actions that address the relevant risk[;] . . . and (4) whether the Government can invoke the necessity doctrine as a defense." *Id.*

192. NCA5 REPORT-IN-BRIEF, *supra* note 45, at 36.

may be more accurately treated as mandatory repairs. Absent a statutory or doctrinal change in shaping the scope of sovereign immunity, governmental entities at all levels will wrestle with deciphering the precise line between ministerial and discretionary duties.[193]

2. Are Climate-Driven Extreme Weather Events Unforeseeable Acts of God?

Second, governmental entities could defend a decision not to upgrade or maintain infrastructure in the face of an extreme weather event by arguing that such events are Acts of God that absolve the government of any legal wrongdoing. Under contract and tort law, an Act of God is treated as a superseding event that interrupts the causal chain, thus shielding the government from property and tort law claims.[194] But discerning whether a weather event is truly an Act of God or a known, foreseeable event is made more challenging by climate change's role in destabilizing and exacerbating extreme weather events. Consider how the two Michigan cases below struggle to apply the Act of God defense when dealing with climate-related changes in the natural environment.

First, a Michigan state court decided *Fingerle v. City of Ann Arbor* in 2014, addressing whether water damage to a resident's home was due to the City's failure to construct adequate drainage infrastructure.[195] The homeowner lived in an area historically prone to flooding.[196] Ann Arbor argued that the damage—which occurred during a particularly intense rainstorm—constituted an Act of God, thus absolving the city of any liability. The Michigan state court agreed that the rainstorm was, indeed, an Act of God, stating "[n]o law has ever imposed an obligation . . . from acts of God or consequences of severe weather."[197]

Subsequently, in 2023, a Michigan court decided *Manitou Island Transit, LLC v. United States*, which addressed whether the government must maintain public infrastructure that faces deterioration by known environmental factors.[198] Here, a private ferry operator on Lake Michigan sued the National Park Service ("NPS"), arguing that the NPS failed to follow its contractual obligations when it failed to maintain public docks on public lands.[199] NPS argued that Lake Michigan was experiencing "unprecedented high water levels" that should be considered an Act of God, absolving the NPS of any wrongdoing.[200] The court rejected the Act of God defense, finding that the

193. *See* Jones et al., *supra* note 30, at 93–94.
194. *See, e.g.*, Manitou Island Transit, LLC v. United States, 168 Fed. Cl. 218, 226 (Fed. Cl. 2023).
195. Fingerle v. City of Ann Arbor, 863 N.W.2d 698, 700–01 (Mich. Ct. App. 2014).
196. *Id.* at 700.
197. *Id.* at 703.
198. *Manitou Island Transit, LLC*, 168 Fed. Cl. at 219.
199. *Id.*
200. *Id.* at 226.

high water levels did not absolve the NPS from following through on its existing contractual obligations.[201] Specifically, the court found that NPS should have anticipated the record-high water levels and repaired the dock, as evidenced by record water levels from the previous year.[202] Although climate change is not specifically mentioned in *Manitou Island Transit*, the court refused to find that the increased water level was an "unanticipated change" that absolved NPS from taking action.[203]

How can we distinguish *Manitou Island Transit* from *Fingerle*, two Michigan state cases addressing the scope of the Act of God defense with similar fact patterns? First, the signed contract between Manitou Island Transit and the United States established a clear, written duty beyond a common law tort obligation. Second, Lake Michigan's high water from the previous year made it difficult for the government to credibly argue that the high-water levels were truly unforeseeable. Although an Act of God relieves the defendant from liability, an extreme weather event must be determined to be *unforeseeable* for an Act of God defense to be successful.[204] In the face of climate change, state courts are struggling to determine whether an extreme weather event is properly characterized as a superseding event or a foreseeable event and whether environmental change is truly unanticipated.

The Act of God defense may become harder to assert as climate change results in extreme weather patterns that increase in frequency and intensity. And Act of God defenses are asserted by both private entities (insurance companies) and governmental entities. The changing application of this defense provides an example of a legal doctrine that applies one way in a more stable "Earth 1.0"[205] but will prove unworkable for a climate-destabilized "Earth 2.0."[206] If the Act of God defense is limited or eviscerated by a doctrinal evolution, abandonment will accelerate—a topic that I turn to below.

III. THE LAW OF CLIMATE ABANDONMENT

In addition to government-led retreat, individual citizens are making the difficult choice of abandoning their properties in the face of rising insurance costs and climate-driven natural disasters.[207] Property abandonment without a conveyance, forfeiture, or clear exchange of title resides in a legal gray area that creates uncertainty over who is responsible for post disaster cleanup, debris removal, and environmental remediation.

Relatedly, private insurers have already abandoned several states, refusing to issue new policies in the face of growing climate risk. Insurance actuarial

201. *Id.*
202. *Id.*
203. *Id.* at 227 n.8.
204. Fingerle v. City of Ann Arbor, 863 N.W.2d 698, 701 n.5 (Mich. Ct. App. 2014).
205. Nevitt, *Legal Crisis*, *supra* note 15, at 1054.
206. *Id.* at 1054–55.
207. Ruppert, *Take Out the Trash*, *supra* note 40, at 215–17.

risk models are integrating climate risk as part of their analysis, acting as leading abandonment indicators.[208] Indeed, several private insurance companies have already abandoned markets in Florida, California, and elsewhere—a trend that is poised to accelerate in the face of climate-informed actuarial tables.[209] Homeowners and renters have seen a significant uptick in insurance premiums, further exacerbating the housing affordability crisis. The most climate-exposed markets are experiencing the largest insurance increases and exits.[210] What's more, insurance abandonment has forced people to sell their homes, often at a loss. Because most mortgage companies require prospective homeowners to acquire homeowner's insurance, insurance abandonment raises the specter of a pernicious doom loop of unaffordability, lack of access to mortgage markets, and—ultimately—abandonment.[211]

In what follows, I describe and analyze the law of climate abandonment. This encompasses: (1) relevant federal environmental law governing abandoned property cleanup; and (2) relevant state environmental laws that must also take into account shifting property lines.[212] Tragically, property abandonment has become an understandable, even rational choice following a natural disaster, rising sea levels, or recurrent flooding. Lawmakers and policymakers must acknowledge this reality and meet the challenge head-on by adopting policies that clarify individual and governmental responsibility.

A. CLIMATE ABANDONMENT: HAPHAZARD AND CREATING LEGAL UNCERTAINTY

Physical abandonment involves leaving a property derelict or unilaterally severing ties of ownership to a property without a clear exchange of title to either a governmental authority or a private owner.[213] Ideally, real property passes from one owner to another with a clear, documented exchange of title. Abandonment is distinct from both a conveyance and a forfeiture of real property. A conveyance occurs when a person gifts or sells property to "a particular person or group of people."[214] Forfeiture is often involuntary—and

208. *See* Michiel W. Ingels, W.J. Wouter Botzen, Jeroen C.J.H. Aerts, Jan Brusselaers & Max Tesselaar, *The State of the Art and Future of Climate Risk Insurance Modeling*, 1541 ANNALS N.Y. ACAD. SCIS. 100, 104 (2024).

209. Nevitt & Pappas, *supra* note 10, at 1617–21.

210. *Id.*

211. The U.S. government backs several lending programs, such as the Department of Veterans Affairs home loan program. *See generally VA Home Loans*, U.S. DEP'T VETERANS AFFS., https://benefits.va.gov/homeloans [https://perma.cc/4TGZ-L4J6] (June 3, 2025).

212. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1029 (1992).

213. *See* Eduardo M. Peñalver, *The Illusory Right to Abandon,* 109 MICH. L. REV. 191, 196 (2010). Professor Peñalver notes that abandonment is distinct from a conveyance and forfeiture. *Id.* at 198. A conveyance may include "a gift, sale, or devise [where] the conveyor's intent to give up ownership is conditioned on the ability to direct the property toward a particular person or group of people." *See id.* A forfeiture occurs when a property owner must "sever the bonds of ownership," often to the state. *Id.* Forfeiture can occur in a criminal or civil manner. *See id.* at 199.

214. *Id.* at 198.

often takes place via bankruptcy or other default procedures. Forfeiture takes place when a property's ownership bonds are severed, resulting in an involuntary surrender of ownership to the state or another person or entity.[215]

Today, property abandonment often takes place in a reactive manner, signaling a failure of adaptation planning. When abandonment occurs in a haphazard, unmanaged, and reactive manner, dangerous environmental conditions result. In addition, businesses may choose to abandon their property in the face of climate risk, declaring bankruptcy in the process.[216] Abandonment also raises important questions about legal liability over cleanup. We should strive for managed, government-driven retreat and discourage post-disaster abandonment. Abandonment may be inevitable for certain homes, but care should be taken to ensure clear responsibility over cleanup, remediation, and debris removal.[217]

Recall Climate Abandonment Areas: communities that have lost population in a manner that can be linked to climate change-related flood risk.[218] Although First Street focuses on flood risk in its abandonment discussion, abandonment can also result from other natural hazards such as wildfires, wind damage, and other extreme weather events. Despite our collective understanding of the growing risk posed by climate change, individuals have been slow to react to environmental and climate stressors. Americans are disproportionately moving to areas exposed to even greater risk.[219] This trend of moving to climate-exposed areas accelerated during the COVID-19 crisis. Indeed, the real estate firm Redfin recently estimated that the areas most exposed to flood risk saw a 103 percent *increase* in inhabitants.[220] Following Hurricane Ian in Florida, for example, a county that suffered massive destruction and bore the brunt of hurricane impacts witnessed a 65 percent *increase* in population from the prior two years.[221]

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215. *Id.* at 199.

216. See BEN CALDECOTT, ELIZABETH HARNETT, THEODOR COJOIANU, IREM KOK & ALEXANDER PFEIFFER, STRANDED ASSETS: A CLIMATE RISK CHALLENGE 5 (Ana R. Rios ed., 2016), https://publications.iadb.org/en/stranded-assets-climate-risk-challenge [https://perma.cc/F2V9-BDGC], for a discussion of the risks posed by "stranded assets" (defining "stranded assets" as assets that have "suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities" due to increased exposure to environment-related risk).

217. Some scholars have called for the designation of "Sacrifice Zones" before disaster strikes. *See, e.g.*, Jonathan Rosenbloom, *Sacrifice Zones*, 24 NEV. L.J. 891, 943–60 (2024).

218. CLIMATE ABANDONMENT AREAS, *supra* note 3, at 1–5.

219. *Id.* at 5–6 (graphically depicting movement to such areas).

220. Molly Bohannon, *Americans Keep Buying Homes in Flood-Prone Areas due to Remote Work and Affordability — Despite Climate Risks*, FORBES (July 25, 2023, 1:47 PM), https://www.forbes.com/sites/mollybohannon/2023/07/25/americans-keep-buying-homes-in-flood-prone-areas-due-to-remote-work-and-affordability—despite-climate-risks [https://perma.cc/X8SF-C3RT]. There is some evidence that people will make decisions on where to live based upon better climate risk information. CLIMATE ABANDONMENT AREAS, *supra* note 3, at 8.

221. Bohannon, *supra* note 220.

In a natural disaster's aftermath, property owners (and renters) are making the difficult decision of abandoning their homes. In the aftermath of Hurricane Katrina, for example, thousands of residents abandoned their homes when they could not afford to rebuild, while many others sold their homes at a massive loss to predatory developers.[222]

The duty to maintain and upgrade, discussed earlier, is inextricably linked to follow-on abandonment decisions.[223] Limiting access to a home can drive abandonment decision-making. As states and localities disinvest from roads that eliminate or hinder access to property, property values in affected rural areas may decline, potentially contributing to abandonment decisions. Once unthinkable, abandonment may make financial sense, particularly if a home is no longer fully accessible or insurable.[224] Indeed, in recent years, extreme weather events are wreaking havoc on a broad swath of climate areas, resulting in an uptick of abandoned "zombie properties" that will have to be rebuilt, remediated, or removed.[225]

The abandoned property may also become a nuisance property.[226] But an abandoned property has likely lost all or most of its value, making it difficult to hold the owner accountable for damages. A property owner may make the decision to cut all financial ties with the property and stop paying the mortgage, property taxes, and any fines related to the abandonment.[227]

In sum, climate abandonment creates legal uncertainty and environmental risk to the community and potential legal risk to the property owner. We are finally having frank discussions of abandoning certain areas in the face of climate change, raising important questions of cleanup, accountability, and liability.[228] But much more needs to be done in the face of growing climate impacts. Going forward, policymakers and community leaders alike must first embrace adaptation realism—the need for transformational adaptation action.

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222. Richard A. Webster, Jeff Adelson, David Hammer & Sophie Chou, *The Federal Program to Rebuild After Hurricane Katrina Shortchanged the Poor. New Data Proves It.*, PROPUBLICA (Dec. 11, 2022, 5:00 AM), https://www.propublica.org/article/how-louisiana-road-home-program-shortchanged-poor-residents [https://perma.cc/BJR9-QSXA] ("[A poorer] community is now pockmarked with empty lots and abandoned homes.").

223. *See supra* Section II.D.

224. We don't know for sure the precise number of properties that are at risk to abandonment, but the number is steadily growing in the face of climate change impacts.

225. Eileen Kelley, *Abandoned Homes Battered by Hurricane Ian to Come Down*, WGCU PBS (Sept. 22, 2025, 11:56 AM), https://www.wgcu.org/top-story/2025-09-22/abandoned-homes-battered-by-hurricane-ian-to-come-down [https://perma.cc/A7MK-EG44] (reporting that Lee County awarded $350,000 contract to demolish 28 abandoned homes destroyed by Hurricane Ian).

226. Peñalver, *supra* note 213, at 217.

227. *Cf.* Pocono Springs Civic Ass'n v. MacKenzie, 667 A.2d 233, 235–36 (Pa. Super. Ct. 1995) (discussing abandonment as "the voluntary relinquishment of a known right").

228. For an outstanding discussion of who pays for the costs of cleanup in the context of abandoned properties, see generally Ruppert, *Take Out the Trash*, *supra* note 40. *See also* Peñalver, *supra* note 213, at 192 ("[Y]ou do not think about abandonment law much at all.").

B. Federal Environmental Law's Role in Abandoned Structures

There are several legal questions associated with a property owner's legal duty to remove abandoned buildings. Following a storm event, structures may no longer be habitable or may require significant repair. An extreme weather event may have caused the structure to be submerged through the process of avulsion, shifting the line between private and public property.[229] Determining the responsibility for cleanup and abandonment is a question of state law, but several federal environmental laws must also be considered, a subject that I turn to below.[230]

1. Rivers and Harbors Act

Congress enacted the Rivers and Harbors Act to bar the unpermitted discharge of refuse into navigable waters. The River and Harbors Act prevents interference in the nation's waters to keep the channels of interstate commerce open; it does not address water quality. Two provisions are of special importance for property abandonment.

First, the Rivers and Harbors Act prohibits individuals from "creat[ing] any obstruction not affirmatively authorized by Congress" that obstructs navigable waters.[231] Specifically, the River and Harbors Act prohibits the building of wharves, jetties, piers, or "other structures in any port" that obstruct navigable waters without authorization.[232] This prohibition potentially covers a wide swath of residential and commercial properties—if an abandoned property obstructs navigation in a waterway, the owner could violate the Rivers and Harbors Act and be subject to civil or criminal penalties.[233]

Second, section 13 of the Rivers and Harbors Act is even broader and has major implications for abandoned properties. Section 13 states "[t]hat it shall not be lawful to throw, discharge, or deposit . . . from the shore . . . into any navigable water of the United States."[234] The Supreme Court has interpreted the Rivers and Harbors Act to encompass industrial waste discharges, whether or not they threatened navigation.[235] The Rivers and Harbors Act is a criminal

229. The property line shift is a question of state law. *See, e.g.*, ARI SILLMAN, TROUBLED WATERS: COASTAL AVULSION, A STATE SURVEY 4–8 (2020), https://eelp.law.harvard.edu/troubled-waters-coastal-avulsion-a-state-survey [https://perma.cc/HF43-AXYH] (surveying state laws as a student project).

230. *E.g.*, Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251–1389; Rivers and Harbors Appropriation Act of 1899, 33 U.S.C. §§ 401, 403–404, 406–418 [hereinafter Rivers and Harbors Act].

231. 33 U.S.C. § 403.

232. *Id.* As written, this authorization must come from either Congress or the Secretary of the Army, with plans recommended by the Chief of Engineers. *Id.*

233. *See id.* (prohibiting obstruction of navigable waters without authorization); *id.* § 406 (civil penalties); *id.* § 411 (criminal penalties for violations of § 403).

234. *Id.* § 407.

235. *See, e.g.*, United States v. Republic Steel Corp., 362 U.S. 482, 485 (1960); United States v. Standard Oil Co., 384 U.S. 224, 229–30 (1966).

statute, and violations can include fines up to $25,000 per day or even imprisonment.[236]

The Rivers and Harbors Act applies to all navigable waters, which encompass streams, rivers, lakes, wetlands, swamps, marshes, and low-lying areas that are prone to climate-driven flooding.[237] As an example, the Act would likely apply to abandoned, low-lying homes along the Louisiana bayou.

Consider the case of a property adjacent to a navigable waterway that is no longer habitable following an extreme weather event. The current owner has a mortgage on the home, and the owner resides in a state where the private insurance market has collapsed, making it difficult or nearly impossible to sell the home. The home is both physically and financially underwater, and the homeowner decides to abandon their home, only to have the property slowly recede into the Atlantic Ocean, obstructing navigation in the area. Here, the property owner would also likely violate the River and Harbors Act.

Congress could amend the Rivers and Harbors Act to disfavor abandonment; this could take many forms. New legislation could incentivize sound land use and identify Climate Abandonment Areas, potentially providing grant funding to incentivize retreat before abandonment occurs.[238] As part of its spending power, Congress could also authorize or condition resources to aid with abandonment and debris removal.[239] At a minimum, Congress should clarify how an 1899 law applies to a 2025 abandonment problem that is poised to grow for the foreseeable future.

2. Federal Clean Water Act

The Clean Water Act prohibits any person from discharging any pollutant from a point source into a navigable waterway without a permit.[240] "Pollutant" is broadly defined to encompass a broad swath of items (sewage, garbage, solid waste, etc.), and "discharge" means any addition of any pollutant to navigable waters from any point source.[241] "Point source" encompasses a "discernible, confined and discrete conveyance."[242] Applying this prohibition against point source discharges to abandoned property, an abandoned home in a wetland or navigable waterway could constitute a Clean Water Act violation. But the reality is much murkier following the Second Circuit's ruling in *United States v. Plaza Health Laboratories, Inc.*, which held that an individual is *not* a point

236. 33 U.S.C. § 411.

237. *Id.* § 407; *see* Sackett v. EPA, 598 U.S. 651, 671, 678–79 (2023).

238. *See* CLIMATE ABANDONMENT AREAS, *supra* note 3, at 14 (discussing both "Climate Abandonment Areas" and "Risky Growth Areas").

239. *See* South Dakota v. Dole, 483 U.S. 203, 206–08, 212 (1987) (discussing the breadth of the spending power, and conditioning funds on states raising their drinking age).

240. 33 U.S.C. §§ 1251–1387.

241. *Id.* § 1362(6), (12).

242. *Id.* § 1362(14).

source within the meaning of the Clean Water Act.[243] Today, it remains unclear whether an individual home would qualify as a discharge under the court's logic in *Plaza Health*.

Similar to the Rivers and Harbors Act, the Clean Water Act applies to coastline properties and a wide swath of traditional navigable waterways and wetlands.[244] In *Sackett v. EPA*, the Supreme Court limited the jurisdictional scope of the Clean Water Act to include wetlands that have a continuous surface connection to traditional navigable waterways.[245] Following *Sackett,* some property abandoned to wetlands without a continuous surface connection would no longer violate the Clean Water Act.[246] But *Sackett* has no impact on more traditional navigable waters of the United States, where homes could be abandoned; this includes streams, oceans, rivers, and lakes.[247] In sum, it remains unclear how, precisely, the Clean Water Act applies to residential coastal properties that are most at risk for abandonment. Similar to the Rivers and Harbors Act, efforts should be made to squarely address how the 1972 Clean Water Act applies to a contemporary climate abandonment problem, to protect the nation's waterways while clarifying individual responsibility for cleanup.

3. Comprehensive Environmental Response, Compensation, and Liability Act

Climate change is imposing a significant risk to Superfund sites that are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA").[248] CERCLA applies to "hazardous-waste sites . . . accidents, spills, and other emergency releases of pollutants and contaminants into the environment."[249]

Passed in 1980, CERCLA imposes liability on current and past owners of abandoned property. Before CERCLA's passage, the property owner may have been shielded from liability if the abandoned land resulted in pollution, thus "leaving the community as a whole worse off by depriving it of the benefits generated by the future productive use of the degraded parcel."[250] CERCLA

243. United States v. Plaza Health Lab'ys, Inc., 3 F.3d 643, 648–49 (2d Cir. 1993).

244. *See* Sackett v. EPA, 598 U.S. 651, 674–79 (2023).

245. *Id.*

246. *Id.* at 683–84.

247. *Id.*

248. For a related discussion, see Noah M. Sachs, *Toxic Floodwaters: Strengthening the Chemical Safety Regime for the Climate Change Era*, 46 COLUM. J. ENV'T L. 73, 88–94 (2020).

249. *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, U.S. ENV'T PROT. AGENCY (July 25, 2025), https://www.epa.gov/laws-regulations/summary-comprehensive-environmental-response-compensation-and-liability-act [https://perma.cc/XT74-HP3A].

250. Peñalver, *supra* note 213, at 216–17.

transforms the relationship between the property owner and the state and affected community through the imposition of a strict liability regime.[251]

CERCLA applies even after an individual transfers ownership of a property to the government or another private party. EPA is empowered "to seek out those parties responsible for any release and assure their cooperation in the cleanup."[252] Similar to the Clean Water Act, the vast majority of residential properties at risk of being abandoned are not hazardous waste sites within CERCLA's understood meaning. CERCLA governs the cleanup of industrial sites and toxic waste, while state and local zoning laws govern the cleanup of abandoned *residential* properties.[253]

According to the Government Accountability Office ("GAO"), nearly one thousand Superfund sites are threatened by sea level rise and other climate hazards.[254] These sites include 202 sites that are vulnerable to a coastal hazard or a coastal and wildlife hazard.[255] EPA should identify the most vulnerable Superfund sites, and Congress should prioritize and accelerate the remediation of such sites.

C. STATE AND LOCAL LAWS GOVERNING PROPERTY ABANDONMENT

Independent of federal environmental law, state and local land use and zoning laws apply to abandoned property. An abandoned property may violate a building code, empowering the government to fine the building owner or impose a blight tax. There is no federal law that explicitly mandates the removal of private property, although the Coastal Zone Management Act ("CZMA") provides funding for state coastal management plans. The CZMA offers a promising legislative vehicle to address abandoned properties in a state's coastal zone.[256]

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251. 42 U.S.C. § 9607(a); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 805–06 (S.D. Ohio 1983).

252. *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, *supra* note 249.

253. Ruppert, *Take Out the Trash*, *supra* note 40, at 215–16.

254. U.S. GOV'T ACCOUNTABILITY OFF., GAO-20-73, SUPERFUND: EPA SHOULD TAKE ADDITIONAL ACTIONS TO MANAGE RISKS FROM CLIMATE CHANGE 19 fig.3 (2019). Many more contaminated sites which do not have Superfund designations may also be at risk. *See, e.g.*, K. Hill, D. Hirschfeld, C. Lindquist, F. Cook & S. Warner, *Rising Coastal Groundwater as a Result of Sea-Level Rise Will Influence Contaminated Coastal Sites and Underground Infrastructure*, 11 EARTH'S FUTURE, Oct. 28, 2023, at 11, https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2023EF003825 (on file with the *Iowa Law Review*).

255. U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 254, at 11.

256. For an outstanding summary of the myriad issues associated with the legal issues and abandoned structures, see Jake Hummer, *Abandoning Structures to Rising Sea Levels, What Are the Legal Issues and Solutions?*, HARVARD L. SCH. ENV'T & ENERGY L. PROGRAM (Nov. 3, 2020), https://eelp.law.harvard.edu/abandoning-structures-to-rising-seas [https://perma.cc/3Q46-BFAW].

1. Coastal Zone Management Act: "Climatizing" State Coastal Management Plans

The CZMA provides states with special regulatory authority and resources over the state coastal zone, provided that the state has a National Oceanic and Atmospheric Administration ("NOAA") approved state coastal management plan.[257] Every coastal state (except for Alaska) has a NOAA-approved coastal management plan and receives federal grant funding to implement state laws governing activities within the state's coastal zone.[258] I envision an increased role for the CZMA in defining the duty to remove abandoned property while incentivizing states to assist with abandoned buildings.

Professor Robin Craig has argued that states should frame coastal adaptation land use laws as public health measures that are designed to protect the population from injury, death, and toxic exposure.[259] I agree. Such laws can be integrated under the state's coastal management plan, creating a link between federal resources and sound state coastal planning measures. What's more, framing coastal regulations as public health responses can help the government defend against regulatory takings challenges.[260]

Some states have passed coastal regulations that address whether the prospective homeowner can cover the cost of cleanup or damage to their property. For example, the New Jersey Department of Environmental Protection ("DEP") requires "builders of new structures in riparian zones to mitigate disturbance of vegetation and to provide financial assurance to compensate for ecological loss."[261] The New Jersey law requires "that any proposed development within the State's 'coastal area' that meets the initial construction and development thresholds . . . must obtain a permit from DEP before the commencement of that construction."[262] These financial assurance programs are sound ex ante coastal adaptation measures that help safeguard future construction and help prevent abandonment.

In sum, I envision a more robust role for the CZMA in managing abandoned property along the coastline, building on innovative ideas from New Jersey and elsewhere. And funding could be provided to states that enforce heightened construction standards or prohibit building in vulnerable areas in the first place. In reviewing new or revised coastal management plans,

257. 16 U.S.C. §§ 1451–1468.

258. *Coastal Zone Management Programs*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. OFF. FOR COASTAL MGMT., https://coast.noaa.gov/czm/mystate [https://perma.cc/2N4C-VCYM].

259. Robin Kundis Craig, *Of Sea Level Rise and Superstorms: The Public Health Police Power as a Means of Defending Against "Takings" Challenges to Coastal Regulation*, 22 N.Y.U. ENV'T. L.J. 84, 106 (2014).

260. *Id.* at 88, 95–99.

261. Hummer, *supra* note 256; *see* N.J. STAT. ANN. § 13:19-5 (West 2024).

262. *In re* Protest of Coastal Permit Program Rules, 807 A.2d 198, 208 (N.J. Super. Ct. App. Div. 2002) (citation omitted). This law has been challenged as a taking, but the New Jersey Supreme Court has held otherwise.

NOAA could require that states affirmatively address abandonment and debris removal, with an eye toward moving people away from climate-exposed areas.

2. The Challenge of Shifting Property Lines and Climate Change

Determining responsibility for the cleanup of abandoned properties is complicated by shifting property lines from sea level rise, extreme weather events, and storm surge. Broadly speaking, these events can be characterized as accretion—a "gradual accumulation of land by natural forces"[263]—or avulsion—"[a] sudden removal of land . . . by flood" or other natural event.[264] The law surrounding accretion recognizes that property lines shift slowly over time, moving the high tide line and the public–private divide.[265] Erosion occurs gradually as the sea level rises and swallows land over time.[266] In that case, the private property owner loses property rights as the mean tidal mark shifts landward.[267] But if drought causes a freshwater lake to recede, the private property owner may gain rights as the tidal mark shifts further away.

In contrast, avulsion events are sudden. Avulsion occurs following a major storm or other extreme weather event.[268] Avulsion events move the water line up to the private property, thus increasing the size of the public trust property at the expense of the private property owner.[269] The upshot is that climate change results in property winners and losers depending on the nature and timing of the event. Avulsion also includes beach renourishment and other man-made interventions, further complicating ownership and responsibility for cleanup.[270] Some states have recognized that property owners have the right to reclaim and rebuild lost land following a hurricane or other instantaneous, extreme weather event. Yet many states have not updated for new climate realities and have not fully considered the consequences of avulsion incidents.[271]

263. *Accretion*, BLACK'S LAW DICTIONARY (11th ed. 2019). The terms "accretion" and "erosion" are often used interchangeably. *Id.*

264. *Avulsion*, BLACK'S LAW DICTIONARY (11th ed. 2019).

265. Stop the Beach Renourishment, Inc. v. Fla. Dep't of Env't Prot., 560 U.S. 702, 707–08 (2010) (explaining that the boundary between public and private property on the beach is the mean high-water line, which moves gradually landward or seaward as the shore erodes or accretes).

266. *Id.*

267. *Id.*

268. SIDERS, COASTAL RETREAT HANDBOOK, *supra* note 41, at 43. Avulsion stands in contrast to erosion or accretion where slow onset beach erosion moves the beach. *See* Severance v. Patterson, 370 S.W.3d 705, 722–27 (Tex. 2012) (distinguishing between accretion and avulsion as applied to rolling easements and the Texas Open Beaches Act).

269. MARGARET E. PELOSO, ADAPTING TO RISING SEA LEVELS: LEGAL CHALLENGES AND OPPORTUNITIES 98–101 (2018).

270. Walton County v. Stop Beach Renourishment, Inc., 998 So. 2d 1102, 1116–17 (Fla. 2008); Sillman, *supra* note 229, at 4–5.

271. *See, e.g.*, *Walton County*, 998 So. 2d at 1117; Sillman, *supra* note 229, at 8–12.

For example, if a property is abandoned at the landward side of the high-water line, the property stays with the original owner and is subject to fines and cleanup fees imposed by the local government.[272] If the property falls seaward from the high-water line, the property may now be part of the public trust and no longer the original owner's responsibility.[273] When disaster strikes, property lines shift dramatically—an avulsion event.[274] With avulsion events poised to increase in scope, scale, and frequency, states should update their laws, clarifying responsibility over abandonment, remediation, and whether there is a right to return to property that is now held in the public trust.

In addition, some portion of a state's coastal navigable waters are already held in public trust for use by the public. Although a full exploration of public trust and climate impacts is beyond the scope of this Article, each state defines where the public trust line begins and ends. Public trust land can commence at the mean high tide line, the mean low tide line, or the vegetation line.[275] And this line shifts over time, something that is happening with greater frequency due to climate-driven disasters.

Finally, as climate impacts are felt along the coastline, officials are turning to rolling easements or setbacks to provide for better shoreline protection.[276] Rolling easements often prohibit coastal armoring or other coastal property protection. Under a rolling easement, "coastal habitats are allowed to retreat naturally with sea level rise and human development must give way to the advance of the sea."[277] As sea levels rise and erode the shoreline, the public trust easement "rolls" with this shift as private property is swallowed and consumed by the public trust.[278] Over time, rolling easements shift the public–private property line as the sea level adjusts.[279] Rolling easements are in response to natural events in an effort to provide better shoreline protection.[280] Although a lighter touch than eminent domain proceedings—which result in the direct, physical appropriation of property—rolling easements nevertheless can dramatically shift the public–private property line over time.

In sum, we already know that governmental entities "cannot simply 'eminent domain' their way out of" the abandonment problem without facing

272. *Walton County*, 998 So. 2d at 1108.

273. *See* Christopher Flavelle, *The Fighting Has Begun over Who Owns Land Drowned by Climate Change*, BLOOMBERG (Apr. 25, 2018, 8:00 AM), https://www.bloomberg.com/news/features/2018-04-25/fight-grows-over-who-owns-real-estate-drowned-by-climate-change (on file with the *Iowa Law Review*).

274. PELOSO, *supra* note 269, at 98–100.

275. *Id.* at 95.

276. For an outstanding discussion of rolling easements, see James G. Titus, *Rising Seas, Coastal Erosion, and the Takings Clause: How to Save Wetlands and Beaches Without Hurting Property Owners*, 57 MD. L. REV. 1279, 1313–17 (1998).

277. PELOSO, *supra* note 269, at 104.

278. *Id.*

279. *Id.*

280. *Id.*

significant political and financial costs.[281] Although "climatizing" existing laws and doctrines may not be sufficient to meet the climate challenge in the long run, several states and localities are taking on this challenge, a subject that I address below.

IV. MANAGING RETREAT AND ABANDONMENT

[T]he U.S. has sustained 403 weather and climate disasters for which the individual damage costs reached or exceeded $1 billion. The cumulative cost for these 403 events exceeds $2.915 trillion.[282]

The law of climate retreat and abandonment presents unique legal and policy challenges that we are only beginning to comprehend. Too often, laws, doctrines, and policies frustrate retreat efforts, even when retreat is a preferred adaptation option. In what follows, I offer several recommendations to guide retreat and abandonment decisions, with an eye to removing the legal obstacles to managed retreat and addressing the inequities associated with shadow disinvestment.

A. SPECIFIC RECOMMENDATIONS

These four recommendations focus on practical solutions that state and local governmental entities can implement today. But these recommendations can only do so much; common law doctrines that inform governmental duties owed to citizens should ideally evolve to take into account a climate-destabilized future. Just as stationarity is being questioned as a sound planning principle for a physically unstable planet, long-standing laws, doctrines, and policies governing adaptation may no longer be workable.[283] Thankfully, cities and states can serve as "laborator[ies]" of democracy, providing legal and policy solutions that state and local governments can implement today.[284]

1. Adopt Best Planning Practices: Integrate Retreat into Adaptation and Resiliency Planning

Regardless of whether and how the common law duties to maintain, upgrade, rescue, and serve evolve, governmental entities at all levels should invest in forward-looking adaptation and resiliency plans. As a general matter, ex ante adaptation and resiliency planning at all levels of government should be favored over reactive retreat and abandonment. Adaptation and resiliency

281. *See supra* text accompanying notes 75–80.

282. Adam B. Smith, *2024: An Active Year of U.S. Billion-Dollar Weather and Climate Disasters*, CLIMATE.GOV (Jan. 10, 2025) (emphasis omitted), https://www.climate.gov/news-features/blogs/beyond-data/2024-active-year-us-billion-dollar-weather-and-climate-disasters [https://perma.cc/4XVM-H649].

283. Milly et al., *supra* note 53, at 573.

284. New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

plans should engage with the latest climate science that is tailored to the individual community. Plans should be developed methodically and objectively with community input.[285] Indeed, forward-looking resiliency adaptation plans amount to a "no regrets" approach to managing retreat and abandonment that can pay enormous dividends when disaster strikes.[286]

Forward-looking adaptation plans face legal and political headwinds. Politicians are concerned about the loss of the property tax base, leading many political actors to disfavor retreat and favor expensive adaptation measures. But progress is visible. Federal action may drive adaptation planning. The U.S. government released the first National Climate Resilience Framework in 2023 and the National Climate Adaptation & Resilience Plan in 2025, reaffirming the importance of proactive adaptation planning.[287] The Climate Resilience Framework recommends expediting and improving the voluntary buyout process, stating that "[v]oluntary buyouts can be a key driver of relocation, but must be developed equitably, to ensure they are more accessible to underserved groups."[288] Moreover, local governments are releasing more and more innovative adaptation and resiliency plans that wrestle with complex questions around abandonment and retreat. As discussed below, these plans outline where future investment should take place and where retreat and abandonment should be considered.[289]

Despite the inherent value in community engagement and future planning priorities, comprehensive adaptation and resilience planning are lacking in many vulnerable parts of the country. Just thirty-three states have

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285. Any adaptation planning process runs the risk of being captured by parties with an outside interest in continual investment in areas, regardless of climate risk. These interested parties may include real estate developers, existing homeowners, or local officials concerned about a deteriorating property tax base. JAKE BITTLE, THE GREAT DISPLACEMENT: CLIMATE CHANGE AND THE NEXT AMERICAN MIGRATION 259–60 (2023).

286. There is a potential upside of such plans in that regulatory takings challenges may be made against the government should the government decide to disinvestment from the community. *See* Ruppert, *Investment-Backed Expectations*, *supra* note 80, at 257–60.

287. *See generally* WHITE HOUSE, NATIONAL CLIMATE RESILIENCE FRAMEWORK (Sept. 2023) [hereinafter NATIONAL CLIMATE RESILIENCE FRAMEWORK], https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/09/National-Climate-Resilience-Framework-FINAL.pdf [https://perma.cc/8WPE-WYFF]; U.S. DEPT. OF STATE, CLIMATE ADAPTATION & RESILIENCE PLAN 2024-2027 (2024), https://www.sustainability.gov/pdfs/state-2024-cap.pdf [https://perma.cc/DM26-BSQA]. The Trump Administration is in the process of rolling back numerous Biden-era climate initiatives. *See generally* Initial Rescissions of Harmful Executive Orders and Actions, Exec. Order No. 14148, 90 Fed. Reg. 8237 (Jan. 28, 2025).

288. NATIONAL CLIMATE RESILIENCE FRAMEWORK, *supra* note 287, at 29. The Resilience Framework similarly notes that "[f]ederal actors can also provide up-front funding and capacity building for state and local authorities, which would help communities incorporate buyouts in a pre-disaster hazard mitigation plan." *Id.*

289. *See* CITY OF JACKSONVILLE, RESILIENT JACKSONVILLE 144–49 (Oct. 2023) [hereinafter RESILIENT JACKSONVILLE], https://www.jacksonville.gov/departments/planning-and-development/community-planning-division/resilient-jacksonville/docs/resilientjacksonville_oct2023_pages.aspx [https://perma.cc/BW3P-E84E].

some form of a state-level climate action plan.[290] There is little downside for states to develop climate plans. And the potential return on investment in pre-disaster mitigation planning is extraordinary if an action plan is resourced and implemented. By one measure, one dollar spent on pre-disaster mitigation measures can save six dollars in disaster response.[291] Indeed, according to the National Climate Assessment, "well-timed adaptation measures" could avert "[m]ore than half of the damages to coastal property."[292] And the United States already experiences, on average, a billion-dollar weather or climate disaster every three weeks.[293] Despite the clear benefits of adaptation planning, "[f]unding and implementation of adaptation plans remains moderate or low."[294]

State and local governments should partner with their communities and employ proactive planning strategies that favor the health, safety, and welfare of their citizens. In developing such plans, emphasis should be placed on moving not just people but critical assets and infrastructure away from climate-exposed areas. Critical assets and infrastructure can include hospitals, nursing homes, or wastewater treatment plants exposed to the elements.[295] Resiliency plans should also provide ample time for public comment and input, and the results must be widely communicated in an easy-to-understand manner. The optimal resiliency planning should not shy away from difficult adaptation trade-offs concerning where future investment should be made and where retreat should be favored. Well-designed plans can foster community buy-in while also informing the public where investment may take place.

Indeed, resiliency plans that squarely address retreat can also play a legal role in informing the reasonable investment-backed expectations analysis, should state and local governments halt services or disinvest from identified retreat areas.[296] A property owner can no longer claim ignorance if the local government halts services and stops upgrading infrastructure in an area identified as a relocation or abandonment area. The information available to a real property owner could shape the reasonable investment-backed expectations analysis, shielding the government from making enormous "just

290. *State Climate Policy Maps*, CTR. FOR CLIMATE & ENERGY SOLS., https://www.c2es.org/content/state-climate-policy [https://perma.cc/H5T2-H3KV]; *see also State Adaptation Progress Tracker*, GEO. CLIMATE CTR., GEO. L., https://www.georgetownclimate.org/adaptation/plans.html [https://perma.cc/Q5JR-A3SC].

291. Sierra Killian & Rebecca L. Kihslinger, *Before Disaster Strikes: Pre-Disaster Mitigation Funding*, ENV'T L. INST. (Nov. 28, 2018), https://www.eli.org/vibrant-environment-blog/disaster-strikes-pre-disaster-mitigation-funding [https://perma.cc/7VWD-UAN9].

292. NCA4 REPORT-IN-BRIEF, *supra* note 46, at 18.

293. Allison R. Crimmins et al., *Overview: Understanding Risks, Impacts, and Responses*, *in* NCA5, *supra* note 26, at 1-1, 1-17.

294. Dahl et al., *supra* note 56, at 31-1, 31-9.

295. *See* RESILIENT JACKSONVILLE, *supra* note 289, at 30.

296. *See* Ruppert, *Investment-Backed Expectations*, *supra* note 80, at 257–60.

compensation" payouts.[297] It also sends a signal that there is a follow-on cost of staying in an area exposed to climate risk.

In recent years, several cities have developed innovative resiliency plans that address retreat and abandonment. More should follow the example of cities like Jacksonville, Florida—the largest city in the United States by size and a city uniquely impacted by climate change. The city released *Resilient Jacksonville* in late 2023, an innovative resiliency plan that squarely addresses retreat and abandonment.[298] *Resilient Jacksonville* offers an adaptation blueprint that should ideally inspire and influence the actions of other cities and communities.[299] *Resilient Jacksonville* emphasizes the need to protect and potentially relocate vulnerable and critical assets.[300] It also highlights the role of residential buyout and relocation programs for high-risk areas.[301] Key governmental decision points—such as when to upgrade or replace an asset at the end of its lifespan—provide opportunities to reassess whether it is time to relocate an asset to a less vulnerable location.[302]

The *Resilient Jacksonville* plan states that targeted relocation should occur before catastrophic climate events, highlighting the important role that voluntary, formal retreat plays as a valid adaptation option.[303] *Resilient Jacksonville* remains one of the few government-issued planning documents that highlights retreat as a legitimate, even preferred adaptation option. It acknowledges that other adaptation strategies—such as the resistance strategy of building seawalls—are expensive, inefficient, and simply not a sound investment for many areas. Although such adaptation measures could allow residents to stay in place temporarily, *Resilient Jacksonville* calls for the City to offer "voluntary, incentivized, or gradual retreat where fortification and accommodation are not efficient or effective."[304]

To be sure, even the most forward-looking and innovative plans have limitations. Indeed, democratizing climate risk information may help empower individual homeowners and renters with actionable relocation information. But much of this information remains proprietary, and even with

297. U.S. CONST. amend. V. Forward-looking adaptation and resiliency plans amount to "no regrets" policies with little downside but potentially significant upside. *See* Ruppert, *Castles and Roads*, *supra* note 110, at 10932 ("[L]ocal governments should begin to pass policies and disseminate information that helps to appropriately shape the long-term expectations of property owners about which infrastructure in which areas will likely be able to be maintained.").

298. *See* RESILIENT JACKSONVILLE, *supra* note 289, at 144–49.

299. *See id.* (pinpointing areas for relocation and development).

300. *Id.*

301. *Id.*

302. *Id.* at 146.

303. *Id.* at 148.

304. *Id.* at 144.

the best information, residents will choose to remain in place.[305] The psychological trauma associated with retreat and abandonment is another obstacle. Jacksonville's emphasis and acknowledgement of retreat's emotional trauma is particularly noteworthy. For many, even the best-designed managed retreat effort can be an emotionally traumatic event, transcending mere monetary factors.

A growing body of literature highlights that individuals make irrational decisions about where to live and when to move.[306] Better risk information is a worthwhile goal—and efforts underway to democratize information should be embraced—but even the most compelling climate risk information does not guarantee individual or collective action. To better "manage" managed retreat and abandonment, we need laws, doctrines, and policies that take into account the scope and scale of the climate challenge. We need to overcome irrational—albeit understandable—decision-making by forcing action in several instances. And adaptation planners should go beyond quantitative measures and integrate more qualitative measures (loss of history, culture, etc.) that transcend cost and benefits when deciding which adaptation measure to implement.[307] Absent a more holistic analysis, wealthier communities will enjoy continual investment and a wider range of adaptation options while poorer communities' choices skew toward disinvestment and abandonment.

2. Incentivize Voluntary, Formal Retreat

Voluntary buyout programs, a form of voluntary, informal retreat within my retreat typology, should be streamlined and "easy to access, straightforward to complete, and considerate of the financial and emotional cost of relocating."[308] Financial obstacles can be significant, and *Resilient Jacksonville* highlights that state and local funding may be inadequate to retreat at the scale required.[309] Even the most efficient, equitable, and streamlined buyout program costs considerable sums of money. Localities will need to leverage state and federal funding throughout the buyout process—a fiscal reality that favors continual reinvestment for wealthier communities

305. *See* Justin S. Mankin, *The People Have a Right to Climate Data*, N.Y. TIMES (Jan. 20, 2024), https://www.nytimes.com/2024/01/20/opinion/climate-risk-disasters-data.html (on file with the *Iowa Law Review*).

306. *See, e.g.*, Daniel G. Chatman, Andrea Broaddus & Anne Spevack, *Are Movers Irrational? On Travel Patterns, Housing Characteristics, Social Interactions, and Happiness Before and After a Move*, 16 TRAVEL BEHAV. & SOC'Y 262, 263–64 (2019) (reviewing the existing literature).

307. For similar arguments, see A.R. Siders & Idowu Ajibade, *Introduction: Managed Retreat and Environmental Justice in a Changing Climate*, 11 J. ENV'T STUD. & SCIS. 287, 288 (2021).

308. RESILIENT JACKSONVILLE, *supra* note 289, at 148.

309. *Id.* ("Any buyout program will likely need to leverage federal funding, and the City will actively work with agencies like the Federal Emergency Management Agency (FEMA) and the U.S. Department of Housing and Urban Development (HUD) to communicate on the ground needs and push for improvements at the federal level to improve residents' experiences navigating these funding streams.").

and retreat for poorer communities. Although wealthy property owners residing along the coast may be sound candidates for voluntary buyouts, doing so at scale will be cost-prohibitive. Instead, local governments may favor the resistance strategy for wealthy communities and the buyout or the eminent domain strategies for poorer communities. And a recent study found that "local governments in counties with more people and higher incomes are more likely to implement the federal buyout program."[310] To be sure, retreat and abandonment may well be the best option for poorer communities, but policymakers should not be so fixated on cost–benefit analysis as to focus on retreat for poorer communities.

It is not just voluntary buyouts for private, residential property that should be considered. Targeted relocation includes moving critical infrastructure and commercial properties in advance of disaster striking. And future construction of infrastructure and homes should not take place in the floodplains or other climate-exposed areas.

Several states have had success in investing in targeted relocation through voluntary buyout programs. These programs involve significant upfront investment. New Jersey is a nationwide leader in state-led relocation efforts via its innovative Blue Acres Program that has been in place since 1995.[311] The Blue Acres Program is open to homeowners, landlords, or renters who reside in climate-exposed areas. Although the Blue Acres Program represents a significant governmental investment of federal and state money—FEMA and HUD helped fund Blue Acres in the aftermath of Hurricane Sandy—such programs have several benefits and characteristics worthy of exploration and broader consideration.[312]

First, Blue Acres moves families away from climate harm in a voluntary, thoughtful, and methodical manner that prioritizes the most vulnerable communities.[313] Retreat safeguards residents and emergency first responders who no longer have to respond to costly and dangerous lifesaving missions. In sum, formal, voluntary retreat saves lives.

Second, the Blue Acres Program has follow-on flood mitigation benefits that protect the broader community from future disasters. Once New Jersey purchases a home, the State transforms it into open green space that serves as

310. *See* James R. Elliott, Phylicia Lee Brown & Kevin Loughran, *Racial Inequities in the Federal Buyout of Flood-Prone Homes: A Nationwide Assessment of Environmental Adaptation*, SOCIUS 1–2 (Jan. 2020), https://journals.sagepub.com/doi/pdf/10.1177/2378023120905439 [https://perma.cc/HY8J-6X78].

311. *See* SPIDALIERI ET AL., *supra* note 82, at 3–4; *see also Blue Acres*, N.J. DEP'T OF ENV'T PROT., https://dep.nj.gov/blueacres [https://perma.cc/TSE5-ZEMP] (stating New Jersey's Blue Acres project started in 1995); *supra* notes 81–85 and accompanying text (further discussion of the Blue Acres program).

312. *See* RESILIENT JACKSONVILLE, *supra* note 289, at 148–49.

313. *See Blue Acres*, *supra* note 311; *see also* N.J. STAT. ANN. §§ 13:8A-35 to 13:8A-55 (West 2024); Siders, *Managed Retreat in the United States*, *supra* note 42, at 219–20.

a climate buffer in perpetuity.[314] These newly transformed properties safeguard the community from storm surge, sea level rise, recurrent flooding, and other climate impacts. By removing people out of harm's way and then transforming properties to mitigate climate harms, Blue Acres offers a rare climate "win-win."

Third, Blue Acres takes care to focus on community relocation and keeping the cohesion and neighborly ties that too often fade away when retreat occurs. Blue Acres focuses on entire areas that have contiguous or clustered properties that are vulnerable and eligible for a buyout.[315] This community-focused approach can assist citizens in participating in the program. By focusing on the community over individual homes, Blue Acres avoids the "last house standing" problem that is dangerous and isolating for the remaining household. Blue Acres has expanded in recent years to include renters who are often the most vulnerable and poorest population residing in a climate-exposed area. And it continues to evolve. The Blue Acres program now has a tenant relocation program that helps landlords and renters alike move away from climate harm.[316]

In sum, targeted voluntary buyouts can also help avert expensive remediation and cleanup costs should the private property owner decide to abandon his or her property. Ideally, voluntary buyouts via targeted relocation can perform two duties. First, a voluntary buyout transforms a physical property at climate risk to an adaptation buffer that protects other properties and adds to the community's resilience. Second, the voluntary buyout mitigates future environmental harm and remediation if the property is abandoned. If done well, a voluntary buyout can play a substantive role in managing retreat and abandonment that reduces the community's underlying climate risk exposure.

3. Addressing How "Shadow Disinvestment" Harms Under-Served Communities

Renters, underserved communities, and poorer mobile home residents already face significant climate risk.[317] After all, climate change "exacerbates inequities" and "[s]ome communities are at higher risk of negative impacts . . . caused by ongoing systemic discrimination, exclusion, and under- or disinvestment."[318] Shadow disinvestment, a form of informal, involuntary

314. *See Blue Acres*, *supra* note 311.

315. *Id.*; SPIDALIERI ET AL., *supra* note 82, at 3.

316. *Blue Acres*, *supra* note 311; SPIDALIERI ET AL., *supra* note 82, at 3.

317. Mobile home residents are particularly vulnerable to climate change. *See* Hilary Howard & Christopher Flavelle, *How Climate Disasters Are Making Mobile Homes a Huge Risk*, N.Y. TIMES (Oct. 14, 2024), https://www.nytimes.com/2024/10/14/climate/mobile-homes-hurricanes.html (on file with the *Iowa Law Review*) (finding that sixteen million Americans live in mobile or manufactured homes, which are "more likely to be located in flood zones" and are "poorly served by federal disaster programs").

318. Crimmins et al., *supra* note 293, at 1-19.

retreat in my typology above, amplifies and exacerbates existing inequities.[319] Poorer communities are often not even aware of the climate risks, and their exposure to climate risk has been overlooked by legislators and policymakers.[320] There is often not a legal requirement to disclose flood and other climate-related information to renters prior to signing a lease.[321] Renters often lack flood insurance, and poorer families are more likely to relocate for reasons outside their control.[322]

Deliberate disinvestment may be a sensible policy option, but shadow disinvestment should be disfavored and delegitimized whenever possible. And any disinvestment strategy should ideally take into account preexisting underinvestment.[323] Underserved communities are particularly vulnerable to climate "doom spirals," where losing population can lead to lower property values and a reduced property tax base.[324] Children, people with disabilities, the poor, and the elderly are disproportionately harmed by climate change and any disinvestment retreat strategy.[325] Conversely, climate gentrification—where people retreat from higher-risk and expensive areas to more affordable areas —can lead to rising property taxes and displacement for existing residents.[326]

Existing adaptation models addressing where to locate seawalls and other adaptation investments place a heavy emphasis on cost–benefit analysis.[327] By emphasizing the value of protecting property values, wealthier communities are more likely to receive continued investment, and poorer communities are more likely to be targeted for retreat. Abandoning New Orleans, Manhattan, and Miami is simply not feasible under a cost–benefit analysis approach. But retreating from poorer communities may be the favored adaptation approach

319. *See supra* Section II.A.

320. *See generally* Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENV'T L. REP. 10287 (2008).

321. *See* Leah A. Dundon & Janey S. Camp, *Climate Justice and Home-buyout Programs: Renters as a Forgotten Population in Managed Retreat Actions*, 11 J. ENV'T STUD. & SCIS. 420, 420–33 (2021).

322. Karen M'Closkey & Keith VanDerSys, *For Whom Do We Account in Climate Adaptation?*, *in* A BLUEPRINT FOR COASTAL ADAPTATION 67–68 (Carolyn Kousky, Billy Fleming & Alan M. Berger eds., 2021).

323. Crimmins et al., *supra* note 293, at 1-39.

324. *See* Vanessa Williamson & Ellis Chen, *Climate Change Demands a Long-Overdue Reform of the Property Tax System*, BROOKINGS (Jan. 17, 2025), https://www.brookings.edu/articles/climate-change-demands-a-long-overdue-reform-of-the-property-tax-system [https://perma.cc/QS9F-RE9A]; *cf.* J.B. Ruhl & James Salzman, *Climate Change Meets the Law of the Horse: Adapting Legal Doctrines to Increased Flood Risk*, 62 DUKE L.J. 975, 1010–13 (2013).

325. CLIMATE ABANDONMENT AREAS, *supra* note 3, at 15. *See generally* Hari M. Osofsky, *Climate Change and Vulnerable Communities: The Impact of Climate Change on the Poor, the Elderly, and People with Disabilities*, 19 GEO. INT'L ENV'T L. REV. 53 (2006).

326. *See* RESILIENT JACKSONVILLE, *supra* note 289, at 78.

327. *See, e.g.*, RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 9–19 (2008).

under cost–benefit analysis.[328] After all, voluntary buyout programs will be less expensive when they occur in poorer communities, but so will *involuntary* retreat via forceful eminent domain. As Fifth Amendment eminent domain proceedings require just compensation, this amount will be less for poorer communities with lower property values. Indeed, retreat and disinvestment may take on a certain pathway dependence for poorer communities that disregards other adaptation choices. Meanwhile, wealthier communities are reinvested in via expensive resistance measures, where retreat may ultimately be a wiser adaptation choice. Just as poorer communities are prone to shadow disinvestment and "doom spirals," wealthy communities are poised to enter a privileged, virtuous cycle of reinvestment based on quantitative models that prioritize wealth.

4. Embrace Regulatory Transparency and Build Community Support

As part of the planning process and the development of climate resiliency plans, governments should establish clear metrics for when maintenance would cease, or abandonment would commence. Clear metrics that use the latest technology—such as GIS mapping and predictive artificial intelligence to aid in identifying retreat zones—can and should be used. These metrics should be crafted and communicated to the community, linking environmental factors to governmental decision points. For example, a municipality could analyze sea level rise or the number of days that a road was washed away as a basis for future road maintenance repairs. Ideally, this information would be transparent and open to the public. Regulatory transparency should be heavily favored whenever possible.

Three recent cases of successful managed retreat highlight the importance of building trust and community support in the face of environmental hazards. First, the Native American tribe of Isle de Jean Charles just completed a government-led managed retreat with mixed success.[329] This resettlement was part of a $48 million resettlement effort that moved the Jean Charles Choctaw Nation away from a sinking area along the Louisiana bayou.[330] Managed retreat takes time. The Isle de Jean Charles tribe relocated to higher ground in Louisiana, a process that took fourteen years and highlighted the difficulties in community-based relocation. Trust must be established between

328. As of this writing, managed retreat is underway in three communities, and Isle de Jean Charles just completed a managed retreat program. *See, e.g.*, NCA4 REPORT-IN-BRIEF, *supra* note 46, at 48.

329. For an outstanding discussion of the key lessons learned from the Isle de Jean Charles relocation, see generally Baurick, *supra* note 64.

330. *See* Christopher Flavelle, *U.S. to Pay Millions to Move Tribes Threatened by Climate Change*, N.Y. TIMES (Nov. 30, 2022, 8:37 AM), https://www.nytimes.com/2022/11/30/climate/native-tribes-relocateclimate.html (on file with the *Iowa Law Review*). Professor A.R. Siders has highlighted over one thousand instances where retreat has taken place in the United States. *See* Siders, *Managed Retreat in the United States*, *supra* note 42, at 220.

government and community leaders, but trust can be particularly hard to establish with several communities due to historical trauma associated with resettlement.[331]

Second, in 1993, floods from the Mississippi River inundated the small town of Valmeyer, Illinois. Shortly thereafter, the entire town was relocated to an elevated bluff, an early and successful example of FEMA-funded managed retreat. This complex move included federal, state, and local stakeholders. The move went unopposed due to large-scale community involvement.[332] Finally, and separately, the small tribal community of Newtok, Alaska, preemptively decided to abandon their village and relocate to Mertarvik due to environmental concerns. This relocation decision was notable because it was a community-led relocation that was initiated from the "bottom up" and not in response to a specific extreme weather event or other natural disaster.[333]

Managed retreat experiences from Louisiana, Illinois, and Alaska showcase the value of engaging the community early to build trust and support from the bottom up. And residents are often in the best position to gauge environmental stressors and assess the wisdom of relocation. Managed retreat involves a complex, federalist cocktail of community, local, state, and federal actors, where social trust acts as the currency to drive success. More "bottom-up" managed retreat led by trusted community leaders can legitimize and further facilitate the retreat process.

B. ADDRESS THE CLIMATE ADAPTATION PARADOX

Beyond the four recommendations highlighted above, potential governmental liability in the face of known climate risk is poised to increase due to legal uncertainty swirling around the "climate adaptation paradox."[334] Forward-looking adaptation measures that protect people and property may well be legally disfavored if the government is aware of a known risk and refuses to act.[335] Governmental officials may wonder: "Why invest in adaptation measures in the first place when no good deed goes unpunished?"

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331. For an argument along these lines, see generally Nathan Jessee, *Reshaping Louisiana's Coastal Frontier: Managed Retreat as Colonial Decontextualization*, 29 J. POL. ECOLOGY 277 (2022).

332. Dennis M. Knobloch, *Moving a Community in the Aftermath of the Great 1993 Midwest Flood*, 130 J. CONTEMP. WATER RSCH. & EDUC. 41, 43 (2005).

333. *From Newtok to Mertarvik: A Native Alaskan Tribal Village Relocation*, ADAPTATION CLEARINGHOUSE, https://www.adaptationclearinghouse.org/resources/from-newtok-to-mertarvik-a-native-alaskan-tribal-village-relocation.html [https://perma.cc/S67R-CQQS].

334. Farber, *supra* note 34. While not a climate change case per se, in *Litz v. Maryland Department of the Environment*, 131 A.3d 923 (Md. 2016), plaintiff Litz successfully argued that the Maryland Department of the Environment had an affirmative duty to act in the face of a known environmental risk. *Id.* at 931–32.

335. *See* Farber, *supra* note 34. Professor Farber continues,

> Is it unconstitutional for the government to build a levee that reduces the risk of urban flooding but diverts the water to nearby farmlands? The answer could be yes,

Although the legislative and policy recommendations discussed above can do important work in managing retreat, a more fundamental doctrinal shift may be necessary. Upfront adaptation investment decisions by a local government could create legal exposure that the government may simply avoid. As discussed in Part II, the duties to repair, maintain, and upgrade infrastructure in the face of a known climate risk may further disincentivize a governmental entity from taking forward-looking adaptation steps. Failure to make adaptation investments will further accelerate retreat and abandonment as communities are left to fend for themselves.

This legal uncertainty around these governmental duties creates perverse incentives that could shape climate infrastructure and adaptation planning for the foreseeable future.[336] Legal exposure may be averted if the government chooses not to invest in roads, services, or infrastructure in the first place. This legal exposure is not new, but some courts have shown a willingness to impose liability on the government for refusing to act in the face of a known risk.[337] Governmental officials at all levels may choose to avoid legal risk by not taking prudent adaptation steps.

In recent years, the takings doctrine has been expanded by the Supreme Court to encompass *temporary* takings, such as government-induced flooding.[338] This doctrinal shift creates the potential for greater governmental liability that may dissuade taking forward-looking adaptation measures. In *Arkansas Game and Fish Commission v. United States*, the Supreme Court held that a governmental decision to temporarily flood a game management refuge could constitute a taking.[339] The Arkansas Game and Fish Commission sued the U.S. government, arguing that the U.S. Army Corps of Engineers' routine, temporary flooding resulted in a Fifth Amendment taking of property.[340] Between 1993 and 2000, the Army Corps temporarily but regularly flooded the Arkansas Game and Fish Commission property.[341] The Commission sued the federal government in 2005, arguing that the Corps' decision led to a temporary, physical taking of property in violation of the Fifth Amendment.[342]

> unless the government pays for flood easements on the rural lands. But if the government *doesn't* build the levee, it faces no liability from the urban landowners. That's the adaptation dilemma: preparing for climate disaster is legally disfavored.

Id.

336. *Compare* Arreola v. County of Monterey, 122 Cal. Rptr. 2d 38, 55 (Ct. App. 2002) (finding governmental liability based on inaction in the face of a known risk), *with* St. Bernard Par. Gov't v. United States, 887 F.3d 1354, 1360 (Fed. Cir. 2018) ("[T]he government cannot be liable for failure to act, but only for affirmative acts by the government.").

337. *See supra* Sections II.B–.C.

338. *See* Ark. Game & Fish Comm'n v. United States, 568 U.S. 23, 26–27 (2012).

339. *Id.*

340. *Id.* at 26.

341. *Id.* The Court noted that this taking was not inconsequential, resulting in "damag[ing] or destroy[ing] more than 18 million board feet of timber." *Id.*

342. *Id.* at 29.

Ruling for the Arkansas Game and Fish Commission, the Court applied a complex multifactor test that has proven difficult to apply in practice.[343] In doing so, the Court acknowledged that there is "no magic formula" that determines when "a given government interference with property is a taking."[344] Writing for the majority, Justice Ginsburg cited to an 1872 case, *Pumpelly v. Green Bay Co.*, as well as several cases establishing that government-induced seasonal flooding could constitute a taking.[345] Following *Arkansas Game*, government-induced flooding "gains no automatic exemption from Takings Clause inspection."[346] *Arkansas Game* is poised to take on increased importance and may well have a chilling effect on adaptation investment decisions that further accelerate retreat and abandonment.

First, *Arkansas Game* was decided in 2012, when climate adaptation litigation was virtually nonexistent. Since 2012, our collective understanding of climate "known risks"— flooding, wildfire, and extreme weather—has only increased. Second, the Court focused on the foreseeability of governmental harm in a complex balancing test that has already confused lower courts.[347] The Court wrote:

> Also relevant to the takings inquiry is the degree to which the invasion is intended or is the *foreseeable result of authorized government action*. . . . So, too, are the character of the land at issue and the owner's "reasonable investment-backed expectations" . . . . Severity of the interference figures in the calculus as well.[348]

What, exactly, is a "foreseeable result" in the face of climate change? Indeed, the Court's emphasis on foreseeability may further disincentivize well-meaning governmental attempts to protect communities from climate impacts. The mere threat of litigation may have a chilling effect that disfavors taking forward-looking governmental action. After all, climate change is challenging traditional notions of foreseeability, a key concept in establishing whether the government's actions proximately caused the resulting harm.[349] This question is significant for the large-scale adaptation projections being considered in large metropolitan areas like New York City and Miami. Civic

343. Farber, *supra* note 34.

344. *Ark. Game & Fish Comm'n*, 568 U.S. at 31. The Court noted two exceptions to the "magic formula" rule. *Id.* First, "a permanent physical occupation of property properly authorized by government is a taking." *Id.* at 31–32 (citing Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 426 (1982)). Second, a taking occurs when "a regulation that permanently requires a property owner to sacrifice all economically beneficial uses of his or her land." *Id.* at 32 (citing Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1019 (1992)).

345. *Id.* at 32–33.

346. *Id.* at 38.

347. Farber, *supra* note 34.

348. *Ark. Game & Fish Comm'n*, 568 U.S. at 39 (emphasis added) (quoting Palazzolo v. Rhode Island, 533 U.S. 606, 618 (2001)).

349. *See* David G. Owen, *The Five Elements of Negligence*, 35 HOFSTRA L. REV. 1671, 1673–74 (2007).

leaders may be placing adaptation measures in place to alleviate climate impacts and prevent the loss of lives. But what if the Army Corps fails to upkeep these resistance measures?

Finally, the Court's logic in *Arkansas Game* may further dissuade climate adaptation action. In the face of applying a confusing balancing test or determining what, exactly, is foreseeable, government officials may default to doing nothing. After all, the government is not liable if it chooses to do nothing prior to an extreme weather event taking place. Indeed, there is no governmental duty to prevent flooding or even to protect its own citizens from harm. This concern was raised by the Army Corps in *Arkansas Game*, which argued that "[e]very passing flood attributable to the government's operation of a flood-control project" would qualify as a compensable taking.[350]

Ideally, courts should develop a more fulsome takings test that recognizes the challenging choices that must be made to respond to rising disasters and other climate-induced hazards.[351] Some states have adopted a "reasonableness test" in refusing to find governments liable. In *Gutierrez v. County of San Bernardino*, the California court acknowledged that a taking may occur if the government creates a risk that might not otherwise exist.[352] But the court did not ultimately impose government liability on the county after the county installed flood control measures that subsequently harmed private property. In applying the reasonableness test, the court held that the conduct did not create a new risk of flooding, and its primary intent was to contain floodwater—factors that favor finding the county not liable for a taking.[353] Absent a broader doctrinal shift along the lines of the reasonableness test, ex ante adaptation planning is legally disfavored. We are left with shadow disinvestment and unmanaged retreat—ad hoc, reactive, and deeply inequitable.

CONCLUSION

Across the United States, climate change is accelerating the frequency and fueling the severity of extreme weather events, resulting in tragedies and new realities that once seemed unimaginable.[354]

The legal and policy issues associated with climate retreat and abandonment are growing in scope, scale, and importance. Yet the precise scope of these duties differs from state to state, creating a legal hodgepodge further complicated by the government's interventionist role in both building infrastructure and subsidizing climate risk.

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350. *Ark. Game & Fish Comm'n*, 568 U.S. at 36.

351. Farber, *supra* note 34.

352. *See* Gutierrez v. County of San Bernardino, 130 Cal. Rptr. 3d 482, 493 (Ct. App. 2011).

353. *Id.*

354. U.S. DEP'T OF STATE, U.S. NATIONAL ADAPTATION AND RESILIENCE PLANNING STRATEGY 1 (2025), https://unfccc.int/sites/default/files/resource/US-National-Adaptation-and-Resilience-Planning-Strategy-2025.pdf [https://perma.cc/DYS7-K427].

In addressing the law of retreat, governmental officials at all levels must first understand the full menu of choices available to them and the legal and policy implications of disinvesting from climate-exposed areas. In my retreat typology, shadow disinvestment is of particular concern. It short-circuits the democratic process and is uniquely pernicious for poorer, underserved communities. Eminent domain and deliberate disinvestment have a role to play in the law of climate retreat and abandonment, but embracing these strategies at scale faces political and financial headwinds that are insurmountable. Thankfully, several innovative adaptation and resiliency programs are emerging that can be built upon to facilitate managed retreat and empower citizens with information to drive rational decision-making. More challenging will be whether courts can address the challenges associated with the climate adaptation paradox and provide a clearer test of governmental responsibility in the face of foreseeable harms and known climate risks.

In addressing the law of climate abandonment, governmental officials at all levels should clarify who is responsible for environmental remediation and debris removal in the face of climate-induced disasters. Making this determination is particularly challenging in a disaster's aftermath due to shifting property lines and common law doctrines designed for a far more stable time. What was once workable and feasible for a physically stable environment has proven to be unworkable for a period of rapid climate destabilization. Still, the goal remains the same: safeguard individuals and manage climate risk in a deliberate, thoughtful manner that favors managed retreat over unmanaged retreat. The residents of Floyd County, Asheville, and Los Angeles are counting on all of us to make the necessary changes.