

# CLIMATE TRANSITION RELIEF: FEDERAL BUYOUTS FOR UNDERWATER HOMES

STEPHANIE M. STERN<sup>†</sup>

## ABSTRACT

*As climate change causes unprecedented dislocation from flooding and sea-level rise, a new legal regime for climate retreat (i.e., shifting human settlement from severe climate risk zones) is developing. Buyout laws, such as FEMA’s Hazard Mitigation Grant Program, fund government acquisitions of severely flood-impacted homes, enabling owners to relocate, and require localities to rezone acquired land as open space. Despite the growing interest in flood buyouts as a tool for climate change adaptation, there has been little attention by policymakers or scholars to the capacity of buyouts to incentivize “buy ins” to flood zones by subsidizing flood risk-taking—a problematic irony given buyouts’ increasing role in climate retreat. This Article reconceptualizes buyouts from their current focus on dispossession to a form of climate transition relief that balances incentive effects against individual losses. Specifically, this Article advocates for a presumption against buyouts for flooded homeowners in order to curb incentives for high-risk housing choices. This reform would carve out a significant exception for low-income residents of floodplains and means test buyouts. In the face of severely constrained housing choice, unaffordable flood insurance, and high marginal costs from property loss, this group is less vulnerable to incentive distortion from compensation and more vulnerable to harm from dislocation. While this Article focuses on flood buyouts, the model of climate transition relief I propose can inform climate compensation and retreat policymaking more broadly.*

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<sup>†</sup> Professor of Law, University of Arizona James E. Rogers College of Law. I would like to thank Dan Tarlock, Jonathan Nash, Bob Keiter, Kathy Baker, Heather Payne, Felice Batlan, Carol Rose, and the participants of the University of Maryland Environmental Law Workshop, the AALS Environmental Law Works-in-Progress, the Rocky Mountain Mineral Law Foundation Water Law Scholars Workshop, and the University of Arizona Faculty Workshop.

## TABLE OF CONTENTS

Introduction .....	163
I. Buyout Laws as Climate Retreat .....	168
A. Climate Retreat from Floodplains .....	169
B. Federal Flood Buyout Law: The Hazard Grant Mitigation Program .....	173
C. The Uneasy Retrofit of Disaster Law to Climate Retreat.....	177
II. Dispossession versus Efficiency: When Buyouts Increase Buy-in .....	181
A. Dispossession Bias in Buyout Law.....	182
B. Buyouts as Incentives for Buy-in.....	186
C. The Regressivity of Dispossession Bias.....	192
III. Transition Relief Theory for Climate Retreat .....	195
A. Classic Transition Relief Theory .....	196
B. Flood Buyouts as Climate Transition Relief.....	201
IV. Climate Transition Relief: Limiting Eligibility for Compensation .....	203
A. Incentives and Risk Spreading .....	203
B. Risk Perception and Incentive Effects for Middle- and Upper-Income Owners.....	208
C. Exceptions.....	210
D. Pricing Buyout Compensation into Public Flood Insurance .....	211
V. The Heterogeneous Floodplain: Transition Relief for the Poor .....	213
A. Incentives Under Conditions of Choice Constraint.....	213
B. Concentrated Losses and Risk Spreading.....	215
C. The Case for Transition Relief for Low-Income Residents .....	218
D. Social Justice Pitfalls of Means Testing Buyouts.....	219
E. Lessons from the Low-Income Floodplain for Legal Theory.....	223
VI. Implementing Buyouts as Climate Transition Relief.....	224
A. Restructuring Buyout Eligibility .....	224
B. Beyond Compensation for Owned Assets: Tenants and Subsidies .....	227
C. True Retreat: Incentives for Climate-Safe Relocation Post-Buyout .....	231
Conclusion.....	233

## INTRODUCTION

As the climate warms, flooding is uprooting residents from their homes, threatening towns and cities, and altering ecosystems. Research applying population growth trends in high-risk areas to sea-level change projections predicts that 13.1 million people will face inundation by 2100.<sup>1</sup> A recent study by the Federal Emergency Management Agency (“FEMA”) similarly found that flood-prone land in the U.S. will increase by 40 to 45 percent over the next eighty years and by 2100 nearly the entirety of several large southern counties will be underwater.<sup>2</sup> South Florida alone could soon see annual flood losses of over \$25 billion, based on the intermediate range of the National Oceanic and Atmospheric Administration’s model.<sup>3</sup> The most recent research suggests that scientific projections, rather than inflating damage, have underestimated the speed with which water level rise will consume residential communities.<sup>4</sup> Other mass dislocations, such as the displacement of three hundred thousand households by urban renewal programs that redeveloped allegedly blighted structures,<sup>5</sup> and even the

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1. Mathew E. Hauer, Jason M. Evans & Deepak R. Mishra, *Millions Projected To Be at Risk from Sea-Level Rise in the Continental United States*, 6 NATURE CLIMATE CHANGE 691, 691 (2016) (using a projection of 1.8 meters of sea-level rise by 2100).

2. AECOM, THE IMPACT OF CLIMATE CHANGE AND POPULATION GROWTH ON THE NATIONAL FLOOD INSURANCE PROGRAM THROUGH 2100, at ES-7 (2013) (model combining riverine and coastal flooding); Hauer et al., *supra* note 1, at 692 (using a projection of 1.8 meters of sea-level rise by 2100 to predict submergence of Tyrrell, North Carolina; Monroe, Florida; and Hyde, North Carolina).

3. See NAT’L OCEANIC & ATMOSPHERIC ASS’N, GLOBAL AND REGIONAL SEA LEVEL RISE SCENARIOS FOR THE UNITED STATES 23 (2017) (modeling sea-level rise in Florida by year); Galen Treuer, Kenneth Broad & Robert Myer, *Using Simulations To Forecast Homeowner Response to Sea Level Rise in South Florida: Will They Stay or Will They Go?*, 48 GLOB. ENV’T CHANGE 108, 108 (2018) (applying NOAA data to estimate costs). Residents of Florida account for almost 50 percent of at-risk properties from sea-level rise, with southern states together accounting for nearly 70 percent of the total at-risk population. Hauer et al., *supra* note 1, at 692.

4. Christopher S. Watson, Neil J. White, John A. Church, Matt A. King, Reed J. Burgette & Benoit Legresy, *Unabated Global Mean Sea-Level Rise over the Satellite Altimeter Era*, 5 NATURE CLIMATE CHANGE 565, 565 (2015); Amanda Ruggeri, *Miami’s Fight Against Rising Seas*, BBC (Apr. 30, 2020), <https://www.bbc.com/future/article/20170403-miamis-fight-against-sea-level-rise> [<https://perma.cc/XS2V-UNCD>].

5. See William J. Collins & Katharine L. Shester, *Slum Clearance and Urban Renewal in the United States*, 5 AM. ECON. J. 239, 241–42, 265 (2013) (finding that urban renewal imposed high dislocation costs but also had positive effects on income, property values, and population in participating cities).

Great Migration of six million Southern Blacks between 1916 and 1970,<sup>6</sup> pale beside the estimated impact of climate change.

Sea-level rise and riverine flooding are already necessitating “climate retreat,” a budding legal regime for relocating residents in the most severe flood risk zones to higher ground.<sup>7</sup> Voluntary buyout laws that fund government acquisitions of flooded homes at preflood market value are poised to become the centerpiece of climate retreat law, largely due to the dearth of other politically viable options. Federal buyout laws, the largest of which is the Hazard Mitigation Grant Program (“HMGP”), compensate homeowners (not renters) for property value lost to flooding on the condition that they relocate and the acquired land be permanently dedicated as open space.<sup>8</sup> There have been over 48,000 buyouts to date,<sup>9</sup> with a recent government report noting the benefits of increasing the number of buyouts to one million.<sup>10</sup> Quietly, a regime of transition relief for owners facing climate-induced dispossession is emerging, one that will shape residential settlement in climate risk zones.<sup>11</sup>

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6. See ISABEL WILKERSON, *THE WARMTH OF OTHER SUNS: THE EPIC STORY OF AMERICA’S GREAT MIGRATION* 9–10 (2010) (describing mass migration of Blacks to the north and west and comparing it to other mass migrations). Notably, one of the factors driving Blacks from the Mississippi Delta region was displacement caused by the Great Mississippi Flood of 1927. JOHN M. BARRY, *RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA* 417 (1998).

7. Research in this area also uses the term “managed retreat,” which typically refers to a combination of adaptation measures and relocation of residences and other property “out of harm’s way.” Leah A. Dundon & Mark Abkowitz, *Climate-Induced Managed Retreat in the U.S.: A Review of the Current Research*, 33 *CLIMATE RISK MGMT.* 1, 2 (2021) (noting that more research is needed on climate retreat in noncoastal areas). See generally ANNE SIDERS, *MANAGED COASTAL RETREAT: A HANDBOOK ON SHIFTING DEVELOPMENT AWAY FROM VULNERABLE AREAS* (2013) (describing a comprehensive slate of adaptation and retreat tools for climate risk zones).

8. 42 U.S.C. § 5170c(b)(2); Helen J.P. Wiley & Carolyn Kousky, *Speeding Up Post-Disaster Housing Buyouts*, *SOLUTIONS J.*, Fall 2020, at 59, 59 (noting that HMGP is the largest source of buyout funding). For other buyout laws, see *infra* Part I.

9. Elise Gout, *Are Buyouts a Viable Tool for Climate Adaptation?*, *COLUM. CLIMATE SCH.* (June 29, 2021), <https://news.climate.columbia.edu/2021/06/29/are-buyouts-a-viable-tool-for-climate-adaptation> [<https://perma.cc/QL33-Z7LX>] (noting 48,000 buyouts); see also Katharine J. Mach & A.R. Siders, *Reframing Strategic, Managed Retreat for Transformative Climate Adaptation*, 372 *SCIENCE* 1294, 1294, 1299 (2021) (noting 45,000 buyouts).

10. Thomas Frank, *Removing 1 Million Homes from Flood Zones Could Save \$1 Trillion*, *SCI. AM.* (Apr. 27, 2020), <https://www.scientificamerican.com/article/removing-1-million-homes-from-flood-zones-could-save-1-trillion> [<https://perma.cc/G3CF-VF8R>] (citing government report that buyout of one million homes could save government over \$1 trillion).

11. For proposals to expand buyouts, see, for example, Michael Pappas & Victor B. Flatt, *Climate Changes Property: Disasters, Decommodification, and Retreat*, 82 *OHIO ST. L.J.* 331, 401

A fundamental challenge facing climate retreat law is how to balance remedying individual cases of dispossession against the imperative to incentivize location choices and residential shifts out of climate danger zones—and to accomplish this on economically and racially heterogeneous floodplains. Large-scale residential shifts to higher ground, not merely one-by-one relocation, are imperative to manage the predicted scale of residential displacement from rising water.

Government buyouts of homes create incentives for households and developers to overinvest in floodplains real estate. Buyouts offer homeowners de facto insurance against home loss, while imposing no premiums or equivalent of coinsurance. Thus, dispossession relief and flood insurance subsidies spread concentrated losses but simultaneously increase housing density in flood zones and *total* dispossession over time.<sup>12</sup> Compensation also stymies the capitalization of climate risk into real estate prices, the potential “invisible hand” of climate-safe residential settlement.<sup>13</sup> Navigating the tradeoffs between incentive distortion and individual losses is made more complex by economic and racial heterogeneity, with both extraordinary wealth and considerable poverty on floodplains.<sup>14</sup>

Neither the HMGP nor other buyout laws address incentive distortion, and the burgeoning scholarship on buyouts scarcely

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(2020) [hereinafter Pappas & Flatt, *Climate Changes Property*] (“[F]ederal disaster response policies should open the door to more buyout possibilities by increasing buyout funding.”); ANNA WEBER & ROB MOORE, NAT. RES. DEF. COUNCIL, GOING UNDER: LONG WAIT TIMES FOR POST-FLOOD BUYOUTS LEAVE HOMEOWNERS UNDERWATER 4 (2019), <https://www.nrdc.org/sites/default/files/going-under-post-flood-buyouts-report.pdf> [<https://perma.cc/9WS6-DCBQ>] (proposing reforms in anticipation of the growing role of buyouts as climate change increases); Eric Tate, Aaron Strong, Travis Kraus & Haoyi Xiang, *Flood Recovery and Property Acquisition in Cedar Rapids, Iowa*, 80 NAT. HAZARDS 2055, 2055, 2072–73 (2016) (describing the increasing prominence of buyouts and their cost-effectiveness); *see also* Mach & Siders, *supra* note 9, at 1299 (noting that retreat “offers a valuable set of tools” for climate adaptation).

12. *See* REBECCA ELLIOTT, UNDERWATER: LOSS, FLOOD INSURANCE, AND THE MORAL ECONOMY OF CLIMATE CHANGE IN THE UNITED STATES 2, 17 (2021) (describing homeowner lobbying and how Hurricane Katrina created a debt spiral for the NFIP).

13. *Cf.* ADAM SMITH, THE THEORY OF MORAL SENTIMENTS 215 (Knud Haakonssen ed., Cambridge Univ. Press 2002) (1759) (describing an economic theory of the invisible hand where people acting in their individual self-interest in markets produce societal good).

14. *See* James R. Elliott, Phylcia Lee Brown & Kevin Loughran, *Racial Inequities in the Federal Buyout of Flood-Prone Homes: A Nationwide Assessment of Environmental Adaptation*, 6 SOCIOUS 1, 3 (2020) (discussing the racial demographics of floodplain regions); Camilo Sarmiento & Ted E. Miller, *Inequities in Flood Management Protection Outcomes* 12–13 (Am. Agric. Econ. Ass’n Meetings, Selected Paper, 2006) (discussing income differences).

acknowledges the problem. However, a rich theoretical literature in law and economics on transition relief predicts these incentive effects from government compensation.<sup>15</sup> In a seminal paper, Louis Kaplow argued that the government should not extend transition relief, such as compensation or grandfathering in, to parties harmed by changes in legal rules because it distorts incentives and produces overinvestment.<sup>16</sup> Government compensation also reduces investors' motivation to anticipate changes in the law, a point with significant application to water-level rise and property rights.<sup>17</sup> Kaplow contended that private insurance markets balance the tradeoffs between incentive distortion and concentrated losses (risk spreading) better than the government does.<sup>18</sup>

The scholarship on transition relief raises questions that have been overlooked in the haste to compensate and relocate flooded owners. In light of buyouts' propensity to incentivize risky housing choices, should the government offer compensation at all? And if so, what factors should determine whether it offers compensation or subsidies for climate-induced residential transitions? Most fundamentally, should we conceptualize the government's role in climate retreat as providing compensation for individual dispossession, or as transition relief aimed

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15. See Michael J. Graetz, *Legal Transitions: The Case of Retroactivity in Income Tax Revision*, 126 U. PA. L. REV. 47, 64–73 (1977) (examining the efficiency of grandfathering legal changes in income tax); Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 520–41 (1986) (criticizing the incentive and moral hazard effects produced by compensation for regulatory changes); Jonathan Remy Nash, *Allocation and Uncertainty: Strategic Responses to Environmental Grandfathering*, 36 ECOLOGY L.Q. 809, 811, 821, 823–24 (2009) (describing wasteful races to appropriate resources in anticipation of a grandfathering rule based on prior use or property rights); Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transition Relief*, 105 NW. U. L. REV. 1581, 1615–21 (2011) (exploring the incentive effects of grandfathering existing major sources of air pollution and advocating pairing a less stringent standard for pollution from new sources with a more stringent grandfathering rule).

16. See Kaplow, *supra* note 15, at 527–32 & 530 n.56.

17. See *id.* at 531 (“It is socially desirable for investors to take into account the prospects for government reform; compensation eliminates this incentive by insulating investors from an important element of downside risk.”).

18. See *id.* at 529. The work of other scholars, most notably Steven Shavell, suggests that transition relief can be efficient in some circumstances, such as when the individual costs of the new rule exceed its social benefits and law constrains incentive distortion. See Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUD. 37, 37–39, 79–80 (2008) (supporting grandfathering an existing rule when a new rule imposes costs greater than its benefits and pointing out that “present regulated behavior will in principle appropriately reflect all possible future changes in the world”).

at encouraging both ex post relocation and ex ante shifts in housing choice away from flood zones?

In this Article, I propose a model of climate transition relief for flood buyouts that balances mitigating concentrated resident losses against incentivizing high-risk housing choice in floodplains. Applying this model to federal buyout laws, this Article advocates eliminating buyout compensation when the availability of such compensation incentivizes people to live in flood zones, as has occurred with high- and middle-income households. Instead, this Article proposes means testing that targets funding to low-income residents, who are driven to floodplains by the scarcity of affordable housing, rather than subsidies. In addition, because the goal of climate transition relief is to shift residents away from flood zones, rather than solely to compensate owners for asset losses, tenants should be eligible for buyout funding, and buyouts should prioritize relocation to flood-safe areas.

Of note, while reforming buyout laws is an important aspect of climate retreat, it is less impactful than comprehensive reform of flood zone lending, insurance, and zoning.<sup>19</sup> The preeminence of buyouts in climate retreat is largely a consequence of persistent political obstacles to pricing climate risk into FHA-guaranteed mortgages and federal flood insurance and to adopting rigorous state and local restrictions on development in risky areas. Optimally, macroreform to lending, insurance, and zoning will join buyout law as climate retreat policies. The climate-transition-relief model for buyouts, specifically its cures of incentive distortion, concentrated losses, and income differences, can also inform lending, insurance, and other reforms.

This Article unfolds in six parts. Part I describes the emerging need for climate retreat and the major federal buyout programs, originating from disaster law, that the government has conscripted to implement climate retreat. Part II contends that “dispossession bias” permeates buyout laws, leading us to neglect the incentive effects of buyout compensation. Troublingly, buyouts promote “buy ins,” or residential settlement in floodplains, by subsidizing risky decisions to locate in floodplains—the antithesis of climate retreat.<sup>20</sup> Part III describes the theoretical scholarship on transition relief, considers its applicability to climate transitions, and introduces a model of climate

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19. See J.B. Ruhl & Robin Kundis Craig, 4°C, 106 MINN. L. REV. 102, 168–75 (2021) (proposing incentives to relocate in climate-safer areas, among other ex ante or preemptive options that limit the need for climate retreat).

20. See *infra* Part II.

transition relief. Applying climate transition relief, Part IV recommends curtailing buyouts for floodplain residents with the financial means to opt for flood-safe housing and insure against flood risk in order to avoid incentivizing residential settlement in floodplains. Part V proposes a substantial carve-out from the presumption against transition relief for low-income residents of the floodplains, who face severe constraints in housing choice and have less access to insurance markets for risk spreading. Part VI offers thoughts on how to implement reforms to buyout eligibility, expand transition relief to include tenants, and promote flood-safe relocation following buyout. Of note, this Article does not delve deeply into Tribal or intentional communities, not for lack of importance, but because their differing concerns and laws necessitate separate analysis.

### I. BUYOUT LAWS AS CLIMATE RETREAT

The former radicalness of climate retreat has faded to resignation as carbon mitigation efforts have failed to arrest global warming and technology has failed to deliver comprehensive flood control.<sup>21</sup> Coastal armoring via sea walls and beach renourishment with fillers has been an increasingly expensive, and largely unsuccessful, experiment that has not retained water long-term and has eroded beaches.<sup>22</sup> More sophisticated adaptation technologies, such as dikes and levees, have varied, and sometimes unknown, efficacy that differs based on construction, topography, and water patterns.<sup>23</sup> The Army Corps of

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21. See Anamaria Bukvic & Graham Owen, *Attitudes Toward Relocation Following Hurricane Sandy: Should We Stay or Should We Go?*, 41 *DISASTERS* 101, 103 (2017); ORRIN H. PILKEY, LINDA PILKEY-JARVIS & KEITH C. PILKEY, *RETREAT FROM A RISING SEA: HARD CHOICES IN AN AGE OF CLIMATE CHANGE* 9 (2016) (“Like it or not, we will retreat from most of the world’s nonurban shorelines in the not very distant future.”). The Intergovernmental Panel on Climate Change also recognized retreat as a climate response strategy as early as its first report in 1990. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *CLIMATE CHANGE: THE IPCC RESPONSE STRATEGIES* 135 (1990), [https://www.ipcc.ch/site/assets/uploads/2018/03/ipcc\\_far\\_wg\\_III\\_full\\_report.pdf](https://www.ipcc.ch/site/assets/uploads/2018/03/ipcc_far_wg_III_full_report.pdf) [<https://perma.cc/K6WQ-JL3T>].

22. See Scott B. Armstrong, Eli D. Lazarus, Patrick W. Limber, Evan B. Goldstein, Curtis Thorpe & Rhoda C. Ballinger, *Indications of a Positive Feedback Between Coastal Development and Beach Nourishment*, 4 *EARTH’S FUTURE* 626, 633 (2016) (“Beach nourishment does not change the rate of sea-level rise, the prevailing wave climate, or where hurricanes make landfall.”); Arlan Brucal & John Lynham, *Coastal Armoring and Sinking Property Values: The Case of Seawalls in California*, 23 *ENV’T ECON. & POL’Y STUD.* 55, 56 (2020) (describing ways that sea walls increase erosion).

23. See Caroline Wenger, *Better Use and Management of Flood Levees: Reducing Flood Risk in a Changing Climate*, 23 *ENV’T REV.* 240, 242–45 (2015) (describing flood control shortcomings



Engineers now projects that the massive levee system constructed in New Orleans following Hurricane Katrina, at a cost of over \$14 billion, will fail within the decade.<sup>24</sup> Even the most technologically advanced and extensive dike systems, now being pioneered in the Netherlands, offer no guarantee of success.<sup>25</sup>

As flooding from climate change displaces households in the United States, the federal government is now allocating federal disaster relief funds to homeowners to compensate them for the loss of their residences. This Part first describes climate retreat from rising water, with attention to the socioeconomic and racial demographics of floodplains. Next, it introduces the major federal buyout laws that compensate flooded owners for home loss. Last, this Part contends that the federal government is discreetly retrofitting buyout provisions from disaster statutes to fund climate retreat. U.S. disaster law, the source of buyout law and funding, is a problematic frame for climate retreat because it focuses on disbursing immediate relief for harm, rather than on incentives for avoiding the harm.

#### A. *Climate Retreat from Floodplains*

Climate retreat, meaning relocating households from climate risk zones to safer areas, is already occurring in the United States and is projected to affect several million people by 2100.<sup>26</sup> Absent discipline imposed by law or the market, the number of people living in flood zones in the United States will rise as climate risk climbs. Movement into flood-prone regions has persisted and increased in coastal areas, despite copious media coverage and rising public awareness of climate-related hurricanes and other flood disasters.<sup>27</sup> Meanwhile, global

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via case studies and suggesting paths toward improvement). Moreover, adaptation technologies are cost-prohibitive in many areas, certainly at the scale of inundation that will occur. *See id.* at 243.

24. Thomas Frank, *After a 14-Billion Upgrade, New Orleans' Levees Are Sinking*, SCI. AM. (Apr. 11, 2019), <https://www.scientificamerican.com/article/after-a-14-billion-upgrade-new-orleans-levees-are-sinking> [<https://perma.cc/J7W8-3EZV>] (reporting that water could breach the levee in as little as four years).

25. *See* Teake Zuidema, *The Dutch Are Building a Barricade Against Climate Change*, PBS (July 10, 2019), <https://www.pbs.org/wnet/peril-and-promise/2019/07/dutch-barricade-against-climate-change> [<https://perma.cc/SQ8A-MEVW>] (discussing uncertainty of success of new flood-prevention measures in the face of climate-driven sea-level rise).

26. *See* Hauer et al., *supra* note 1.

27. A census study analyzing mobility to coastal regions found that between 1960 and 2008 there was a 150 percent increase in the population of coastal counties along the Gulf of Mexico,

warming continues to raise the sea level more rapidly than originally predicted and flood riverine areas due to increased precipitation or avulsions that shift the natural path of rivers.<sup>28</sup> Currently, more than thirty million people, representing nearly 5 percent of the nation's population, live in a 100-year floodplain (that is, an area with a 1 percent annual risk of flooding).<sup>29</sup> This number doubles for the combined 500-year floodplain, which encompasses areas with a 0.2 percent or higher annual flood risk.<sup>30</sup>

Climate retreat seeks to shift human population away from areas at severe risk from flooding when that risk cannot be managed reliably or cost-effectively with adaptation measures (e.g., levees, sea walls).<sup>31</sup>

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and the production of coastline housing units outnumbered the national average and the production in noncoastal counties. *Emergency Management Coastal Areas*, U.S. CENSUS BUREAU (Nov. 20, 2021), <https://www.census.gov/topics/preparedness/about/coastal-areas.html> [<https://perma.cc/MZ2P-EKFP>]. In some cases, such as Hurricane Andrew, population increased substantially even following major flood damage. *See id.* A satellite study estimating global exposure to flooding based on 913 large flood events between 2000 and 2018 found that total flood exposure decreased slightly in the United States, possibly due to outmigration following Hurricane Katrina. B. Tellman, J.A. Sullivan, C. Kuhn, A.J. Kettner, C.S. Doyle, G.R. Brakenridge, T.A. Erickson & D.A. Slayback, *Satellite Imaging Reveals Increased Proportion of Population Exposed to Floods*, 596 NATURE 80, 81, 83 (2021). However, based on trends, the researchers forecast that U.S. flood exposure will increase from 2010 to 2030. *Id.* at 84 fig.4.

28. *See* Austin J. Chadwick, Michael P. Lamb & Vamsi Ganti, *Accelerated River Avulsion Frequency on Lowland Deltas Due to Sea-Level Rise*, 117 PNAS 17,584, 17,589 (2020) (finding increased avulsion hazards and more inland avulsion-related flooding due to sea-level rise); Dundon & Abkowitz, *supra* note 7 (noting that more research is needed on climate retreat in noncoastal areas).

29. *See* NYU FURMAN CTR., POPULATION IN THE U.S. FLOODPLAINS 2 (2017) [hereinafter NYU FURMAN CTR., POPULATION]. The 100-year flood refers to the statistical probability of a specified magnitude of flooding occurring every 100 years, equaling a 1 percent probability of that level of flood occurring each year. *See* FEMA, *Flood Zones*, <https://www.fema.gov/glossary/flood-zones> [<https://perma.cc/GK8W-TX87>], (last updated July 8, 2020). Prior to the new risk-rating system, FEMA based its flood-hazard zones on a property's elevation in a federally created map called the Flood Insurance Rate Map ("FIRM"). *See* FEMA, *Risk Rating 2.0 Is Equity in Action 2* (Apr. 2021) [hereinafter FEMA, *Risk Rating*], [https://www.fema.gov/sites/default/files/documents/fema\\_rr-2.0-equity-action\\_0.pdf](https://www.fema.gov/sites/default/files/documents/fema_rr-2.0-equity-action_0.pdf) [<https://perma.cc/3GKS-VFFJ>] (detailing effect of new risk-rating system compared to FIRM).

30. *See* NYU FURMAN CTR., POPULATION, *supra* note 29; FEMA, *Flood Zones*, *supra* note 29.

31. *See* Lorenzo Alfieri, Luc Feyen & Giuliano Di Baldassarre, *Increasing Flood Risk Under Climate Change: A Pan-European Assessment of the Benefits of Four Adaptation Strategies*, 136 CLIMATIC CHANGE 507, 519 (2016) (concluding that the projected increase in the frequency and magnitude of river floods due to climate change makes increasing physical protections against water such as levees "not sustainable in the long term"). In other cases, adaptation may pass cost-benefit review but falter due to the inability of governments to secure the massive funding needed for major adaptation projects. *See, e.g.*, Brenden Jongman, *Effective Adaptation to Rising Flood*

In rare cases, climate retreat may mean relocating most or all of a city, as may occur in Miami in the future.<sup>32</sup> More commonly, climate retreat shrinks residential density and infrastructure in the most impacted areas, such as direct waterfront areas and the lowest elevations.<sup>33</sup> For example, a 2012 buyout of 1300 homes in New Jersey following Hurricane Sandy acquired the highest-risk homes across several communities.<sup>34</sup> Targeted retreat of severely flooded portions of communities reduces risk and the need for disaster relief and flood services, while preserving most of the locality and the economic benefits of proximity to water. In the future, it may be possible to reduce retreat if flood-control technology advances or if we follow the Netherlands and create dedicated floodplains, construct homes whose ground floors are dedicated to flood overflow not habitation, and design floating or “amphibious” homes (homes built to float when floods occur).<sup>35</sup>

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*Risk*, 9 NATURE COMMUN 1, 2 (2018) (noting that effective adaptation to rising flood risk depends on the “right mix of measures . . . subject to levels of risk, funding, and political will”).

32. See Daniel Cusick, *Miami Is the “Most Vulnerable” Coastal City Worldwide*, SCI. AM. (Feb. 4, 2020), <https://www.scientificamerican.com/article/miami-is-the-most-vulnerable-coastal-city-worldwide> [<https://perma.cc/598E-BG66>] (noting that Miami-Dade County will experience “some of the greatest effects from rising seas” and that “[n]early a half-million Floridians living less than 3 feet above current high-water levels could experience regular flooding”).

33. Elevating dykes and levees can usefully reduce flood damage, although not reliably and with significant environmental damage. Research has advocated elevating dykes as a cost-effective measure in Europe. See Michalis I. Voudoukas, Lorenzo Mentaschi, Jochen Hinkel, Philip J. Ward, Ignazio Mongelli, Juan-Carlos Ciscar & Luc Feyen, *Economic Motivation for Raising Coastal Flood Defenses in Europe*, 11 NATURE COMMUN 1, 1–6 (2020) (finding that “at least 83% of flood damages in Europe could be avoided by elevating dykes in an economically efficient way . . . specifically where high value conurbations exist” but “hard protection can affect the landscape in a negative way, increase erosion, reduce amenity value and result in more catastrophic events in the case of failure”).

34. FEMA, *3 Years Long, 3 Years Strong: New Jersey’s Successful Approach to Purchasing Homes Along Sandy’s Flooded Path* (Feb. 11, 2021), <https://www.fema.gov/case-study/3-years-long-3-years-strong-new-jerseys-successful-approach-purchasing-homes-along> [<https://perma.cc/3FBZ-MSST>].

35. Sander van Alphen, *Room for the River: Innovation, or Tradition? The Case of the Noordwaard*, in ADAPTIVE STRATEGIES FOR WATER HERITAGE: PAST, PRESENT AND FUTURE 309, 309 (Carola Hein ed., 2020) (describing the Dutch Room for the River plan for residential living, which is designed around water flow); Thomas Erdbrink, *To Avoid River Flooding, Go With the Flow, the Dutch Say*, N.Y. TIMES (Sept. 7, 2021), <https://www.nytimes.com/2021/09/07/world/europe/dutch-rivers-flood-control.html> [<https://perma.cc/7KYS-JQSQ>] (explaining Dutch floodplain construction); Anna Holligan, *Flood-Proof Homes the Dutch Way*, BBC (Feb. 21, 2014), <https://www.bbc.com/news/av/world-europe-26302176> [<https://perma.cc/8YXA-L7Z9>] (explaining Dutch pioneering of floating and amphibious homes).

Income and racial heterogeneity on the floodplain add significant complexity and environmental justice concerns to designing legal regimes for climate retreat.<sup>36</sup> The income distribution on the floodplain appears bimodal, with both affluent owners and low-income residents occupying flood-prone areas.<sup>37</sup> For example, a 2006 study found high flood losses for households in poverty, low-income households, and higher-income households, and lower losses for middle-income households, suggesting an income split.<sup>38</sup> As Professor A.R. Siders, a leading researcher in climate adaptation, observes, U.S. flood zones “are home to some of the nation’s wealthiest and poorest people.”<sup>39</sup> The bifurcation is likely due to upper-income households’ preference for coastal locations on the one hand, and the comparative affordability of some (often very high-risk) flood zones and wetlands for lower-income households on the other.

Overall, low-income residents predominate on the floodplain, with an NYU study finding that 61 percent of households within the 100-year floodplain lived in a high- or moderate-poverty census tract from 2011 to 2015.<sup>40</sup> Private homes are often more affordable on

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36. See, e.g., Dalbyul Lee & Juchul Jung, *The Growth of Low-Income Population in Floodplains: A Case Study of Austin, Texas*, 18 KSCE J. CIV. ENG’G 683, 683–84 (2014) (finding that low-income people are more likely to live in floodplains in Austin than are high-income people); NYU FURMAN CTR., POPULATION, *supra* note 29, at 4 (“In some cases, waterfront areas may be desirable and expensive, and attract higher-income residents; whereas other floodplain areas may be less desirable, and thus more affordable for households with lower incomes.”); Sarmiento & Miller, *supra* note 14, at 13 (finding that “the poor are more exposed to flood hazards than middle income households” in a study of twenty communities).

37. See, e.g., MOLLY VOLLMAN MAKRIS & MARY GATTA, *GENTRIFICATION DOWN THE SHORE 2–25* (2021) (providing an ethnographic account of coastal gentrification in New Jersey); MIA. DOWNTOWN DEV. AUTH., *GREATER DOWNTOWN MIAMI DEMOGRAPHICS 12* (2016), [miamidda.com/wp-content/uploads/2016MiamiDDADemographicsReporFinal.pdf](https://miamidda.com/wp-content/uploads/2016MiamiDDADemographicsReporFinal.pdf) [<https://perma.cc/YP9B-HT5P>] (reporting greater household income in Greater Downtown Miami, which is proximate to the ocean, than in City of Miami or Miami-Dade County). For example, Miami, an epicenter of flood risk, ranked sixth in the Knight Frank ranking of important cities for ultrahigh-net-worth individuals (i.e., with a net worth of \$30 million or more excluding their primary residence) and second in the Western Hemisphere, after New York City. See KNIGHT FRANK, *THE WEALTH REPORT: THE GLOBAL PERSPECTIVE ON PRIME PROPERTY AND INVESTMENT 22*, 36 (2016), <https://content.knightfrank.com/research/83/documents/en/wealth-report-2016-3579.pdf> [<https://perma.cc/56EX-NK7G>].

38. See Sarmiento & Miller, *supra* note 14, at 13.

39. A.R. Siders, *Social Justice Implications of US Managed Retreat Buyout Programs*, 152 CLIMATIC CHANGE 239, 240 (2019).

40. See NYU FURMAN CTR., POPULATION, *supra* note 29, at 4–5 (defining a moderate-poverty census tract as having a 10–30 percent poverty rate and a high-poverty census tract as an area where more than 30 percent of the population lives in poverty).

floodplains, and subsidized public units are disproportionately located in flood risk zones.<sup>41</sup> Absent intervention, the number of low-income people living in the floodplains will grow over time. Declining real estate prices in flood zones will attract more low-income households, who will move into housing sold, or possibly abandoned, by middle-income households.<sup>42</sup>

There are significant racial disparities as well as economic ones. The 500-year floodplain has a greater percentage of Latino residents (25 percent) compared to their national population share (17 percent) and fewer whites (55 percent in floodplains versus 62 percent nationally).<sup>43</sup> In certain states, such as Arkansas, the percentage of Black residents on the floodplain is nearly double their share of the state population.<sup>44</sup> There is also evidence that Black residents suffer higher amounts of flood damage than other racial groups, likely due to lower elevation and less-resilient housing.<sup>45</sup>

#### *B. Federal Flood Buyout Law: The Hazard Grant Mitigation Program*

As sea and river levels rise, federal laws that fund buyouts of individual homes following disasters are now the United States' primary means of effectuating climate retreat. Federal buyout laws transfer funds to state or local governments to acquire, or buy out,

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41. See NYU FURMAN CTR., HOUSING IN THE U.S. FLOODPLAINS 5 (2017) [hereinafter NYU FURMAN CTR., HOUSING], [https://furmancenter.org/files/NYUFurmanCenter\\_HousingInTheFloodplain\\_May2017.pdf](https://furmancenter.org/files/NYUFurmanCenter_HousingInTheFloodplain_May2017.pdf) [<https://perma.cc/DFA6-7TSD>] (noting that over 8 percent of subsidized public housing units are in flood risk zones).

42. See Koen de Koning & Tatiana Filatova, *Repetitive Floods Intensify Outmigration and Climate Gentrification in Coastal Cities*, 15 ENV'T RSCH. LETTERS, Feb. 18, 2020, at 1, 7 (showing that with pure market forces, "flood damages and the drop in property values results in a gradual decrease in incomes of households residing in the flood zone" because poor residents become entrapped in flood zones and subject to financial losses from flooding and housing prices rise in safer areas).

43. NYU FURMAN CTR., POPULATION, *supra* note 29, at 3.

44. *Id.* at 4. For example, in Arkansas, 27 percent of residents in the 500-year floodplain were Black, almost double their share of the state population. *Id.* However, these patterns reverse in some states, with far fewer Black residents in floodplains than their percentage statewide in Maryland, and fewer Asians residing in floodplains in Washington state than their share of the state population. *Id.*

45. Sarmiento & Miller, *supra* note 14, at 13–14. There is also some evidence that women, due to their higher likelihood of living in poverty, experience more severe social and economic impacts from flooding. Elaine Enarson & Maureen Fordham, *Lines that Divide, Ties that Bind: Race, Class, and Gender in Women's Flood Recovery in the US and UK*, 15 AUSTL. J. EMERGENCY MGMT. 43, 47 (2001) (discussing ethnographic research).

private residential property in floodplains on the condition that the households relocate and the local government permanently dedicate the acquired land as undevelopable open space. FEMA buyouts arise from provisions of the Stafford Act, a disaster relief statute enacted decades prior to national awareness of climate change.<sup>46</sup> Today, these federal “disaster” buyouts are emerging as a potential centerpiece of climate retreat, primarily due to the dearth of other politically viable options.<sup>47</sup>

Five federal programs offer buyouts for homeowners in hazard zones, with most of the buyouts emanating from the amended Stafford Act or disaster provisions within other legislation. Most funding for buyouts comes from the FEMA Hazard Mitigation Grant Program (“HMGP”).<sup>48</sup> In addition, a number of states and localities are adding buyout programs, using funds from stormwater fees and green bonds to acquire homes.<sup>49</sup> This Article focuses on the federal HMGP, but the analysis of the incentive problems from buyouts also applies to smaller buyout programs within FEMA and the Department of Housing and

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46. 42 U.S.C. § 5170c. The exception to this is from the Flood Mitigation Assistance (“FMA”) program. *See* 44 C.F.R. § 78 (2021). The FMA was authorized by the National Flood Insurance Act of 1968, Pub. L. No. 90-446, 82 Stat. 572 (codified as amended at 42 U.S.C. §§ 4104c–d). Congress amended the statute in 1994. National Flood Insurance Act of 1994, Pub. L. No. 103-324, §§ 553–554, 108 Stat. 2160, 2270–74 (codified as amended at 42 U.S.C. §§ 4104c–d).

47. Both public flood insurance and FHA mortgage rules have failed to price in climate risks. Amendments to the NFIP via the Biggert-Waters Flood Insurance Act of 2012 attempted to shift the program away from its current subsidy structure and toward risk-based insurance pricing. *See* Biggert-Waters Flood Insurance Reform Act of 2012, Pub. L. No. 112-141, 126 Stat. 916 (codified as amended at 42 U.S.C. § 4004). However, in response to homeowner lobbying, Congress repealed or delayed (phased in) the key provisions of the Biggert-Waters Act with the Homeowner Flood Insurance Affordability Act of 2014. *See* Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020 (codified at 42 U.S.C. §§ 4001–4131). The Homeowner Flood Insurance Affordability Act restored or “grandfathered in” subsidized rates in a number of circumstances and reduced and phased-in premium increases. *See* 42 U.S.C. § 4015(e)(1), (3). With respect to mortgages, the Federal Housing Finance Agency does not price even extreme climate risk into mortgage eligibility or terms, although it does require that buyers in floodplains secure flood insurance, as required by the Flood Insurance Act. As a result, the government guarantees mortgages in severe flood zones with regularity, a fact that appears to be causing the agency increasing concern. *See* FHFA, *FHFA Listening Session: Climate and Natural Disaster Risk Management for the Regulated Entities* (Mar. 4, 2021), <https://www.fhfa.gov/Videos/Pages/FHFA-Public-Listening-Session-on-Climate-and-Natural-Disaster-Risk-Management-at-the-Regulated-Entities.aspx> [<https://perma.cc/2P7A-JQZ9>].

48. *See* Kelsey Peterson, Emily Apadula, David Salvesen, Miyuki Hino, Rebecca Kihslinger & Todd K. BenDor, *A Review of Funding Mechanisms for US Floodplain Buyouts*, 12 SUSTAINABILITY, Dec. 3, 2020, at 1, 3 (providing a table of common federal buyout funding mechanisms).

49. *See, e.g.*, MINN. STAT. § 103F.161; WIS. STAT. § 281.665.

Urban Development (“HUD”), as well as to emerging state and local buyout programs.<sup>50</sup>

The HMGP requires a presidential declaration of a disaster to release funds for hazard mitigation measures, including buyouts.<sup>51</sup> The statute defines *disaster* as a natural occurrence that has caused damage that states and localities cannot rectify without federal financial assistance.<sup>52</sup> To be eligible for a flood buyout under the HMGP, the land acquired must be within a 100-year floodplain (i.e., a FEMA-designated “Area of Special Hazard” with a 1 percent or higher annual risk of flooding).<sup>53</sup> The locality must also have adopted a hazard

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50. The other FEMA programs that fund residential buyouts are the FMA and the Building Resilient Infrastructure and Communities (“BRIC”) program (formerly the Pre-Disaster Mitigation Program), both of which receive annual appropriations. 42 U.S.C. § 4104c(a); Flood Mitigation Assistance Program, 44 C.F.R. § 78 (2021); FEMA, *Building Resilient Infrastructure and Communities* (Apr. 25, 2022), <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities> [<https://perma.cc/T89K-M6WY>]. There are also a growing number of buyout laws and programs at the state and local level. Manisha Patel & Allie Reilly, *Cooperative Federalism: A Path to Proactive Managed Retreat*, 35 NAT. RES. & ENV'T 20, 23–24 (2021); Siders, *supra* note 39, at 241. For example, the Minnesota Flood Damage Reduction Grant Assistance program funds buyouts and other mitigation projects at a 50/50 cost share with the local or federal government, and the Wisconsin Municipal Flood Control Program offers grants funded through state general-obligation-bond revenue with a 50 percent match from the local government. Peterson et al., *supra* note 48, at 8–9. At the local level, seventeen localities to date have begun to fund buyouts, either in their entirety or by providing the 25 percent match required for FEMA funds by using stormwater utility fees, local-option sales taxes, and municipal and green bonds. *Id.* at 9–12.

51. “The President may contribute up to 75 percent of the cost of hazard mitigation measures which the President has determined are cost effective and which substantially reduce the risk of, or increase resilience to, future damage, hardship, loss, or suffering in any area affected by a major disaster.” 42 U.S.C. § 5170c(a).

52. Of note, presidentially declared disasters are increasingly common, with ninety-seven in 2011 for example. See BRUCE R. LINDSAY, CONG. RSCH. SERV., R42702, STAFFORD ACT DECLARATIONS 1953-2016: TRENDS, ANALYSES, AND IMPLICATIONS FOR CONGRESS 1 (2017). In addition, disaster declarations extend to flooded areas with no immediate threat to safety but significant property damage. See FEMA, *Flood Mitigation Assistance FY 2020 Subapplication Status* (2021) <https://www.fema.gov/grants/mitigation/floods/fy2020-subapplication-status> [<https://perma.cc/GM3T-TUJ4>] (noting that FMA dedicated \$87 million to acquiring properties and paying relocation costs in 2020).

53. 44 C.F.R. § 59.1 (2022) (imposing 100-year floodplain requirement on the three buyout programs administered by FEMA, including the HMGP). The FMA receives funding under the National Flood Insurance statute and deploys funds to state, local, and Tribal governments to acquire properties, in particular repetitive-loss and severe-repetitive-loss properties with past insurance claims for flood damage. 42 U.S.C. § 4104c; 44 C.F.R. § 78 (2021). BRIC is part of the Stafford Act and had an annual budget of \$1 billion in 2021. FEMA, *Building Resilient Infrastructure and Communities FY 2021 Subapplication and Round 1 Selection Status*, <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/after-appl-y/fy-2021-subapplication-status> [<https://perma.cc/C9ZR-NG4W>], (last updated July 29, 2022).

mitigation plan to qualify for funding and formally participate in the National Flood Insurance Program (“NFIP”), which requires planning processes to mitigate flood hazards, strict limits on construction in floodways (i.e., construction or infill in watercourses or on their banks), and elevation of new construction in floodplains.<sup>54</sup>

States and localities initiate buyouts by application to FEMA, typically following major storm flooding when Congress appropriates disaster funds. The houses selected for buyout by the locality must satisfy cost-benefit analysis, which requires that the anticipated flood damage to the home and the ecosystem services (e.g., better stormwater management, improved water quality, and recreation in the newly created open space) exceed the costs of acquisition and demolition.<sup>55</sup> The HMGP and other FEMA buyout programs provide a maximum of 75 percent funding and require a 25 percent cost share from the state, locality, or homeowner.<sup>56</sup> States and localities sometimes garner additional federal funds from HUD community-development block grants to pay all or part of the 25 percent cost share.<sup>57</sup>

Once the cost share is met and funds obtained, state and local agencies implement the buyouts. This is an intensive, multiyear process, with studies reporting an average of five years from a flood to the completion of a buyout.<sup>58</sup> The locality or the state implementing the buyout must inform residents of the opportunity for acquisition, provide required opportunities for public participation, appraise the property and negotiate price, and transfer title. In some cases, homeowners have sought buyout relief, sometimes for years, and are

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Unlike the other FEMA buyout programs, BRIC funding targets the prevention of *future* disasters and increasing community resilience to natural hazards. See FEMA, *Building Resilient Infrastructure and Communities*, *supra* note 50.

54. 44 C.F.R. §§ 59.2, 201, 206 (2022).

55. See, e.g., 44 C.F.R. § 206.434(c)(5) (2022).

56. BRIC buyout funds provide a cost share of up to 75 percent, with special provision for up to 90 percent cost sharing for economically disadvantaged localities with under 3000 residents. 42 U.S.C. § 5133(a), (h)(1). There is no cost-share provision for Community Development Block Grants (“CDBG”) and Community Development Block Grants-Disaster Relief (“CDBG-DR”).

57. See 42 U.S.C. § 5170c(a).

58. See WEBER & MOORE, *supra* note 11 (finding an average time of five years between flood and buyout); Katharine J. Mach, Caroline M. Kraan, Miyuki Hino, A.R. Siders, Erica M. Johnston & Christopher B. Field, *Managed Retreat Through Voluntary Buyouts of Flood-Prone Properties*, 5 SCI. ADVANCES 1, 5 (2019) (finding an average time of 5.7 years between disaster and buyout-project closing).



receptive to acquisition.<sup>59</sup> Other attempted buyouts have led to protests, sometimes based on concerns about discriminatory selection of minority communities for climate retreat.<sup>60</sup> After acquisition, the statute requires that the state or locality permanently dedicate the land as open space or for wetlands management.

Notably, while buyouts are the government's tool of choice for climate retreat, they are not the most effective way to shift population away from flood zones.<sup>61</sup> Mortgage and insurance pricing, as well as stricter prohibitions on development in floodplains, have broader reach and can prevent movement into flood-prone areas, instead of compensating for flood damage after the fact. However, there are enormous political impediments to reforms that price climate risk into housing or prohibit real estate development, including political controversy over climate change and strong public resistance to government action that limits homeownership access and choice.<sup>62</sup>

### C. *The Uneasy Retrofit of Disaster Law to Climate Retreat*

Buyout laws, such as the HMGP, that originate from decades-old disaster laws focused on emergency relief and rebuilding are a problematic fit for climate retreat. These laws have been conscripted into climate retreat rather than designed for it. Congress and the federal agencies have tacitly retrofitted disaster buyout provisions legislated almost fifty years ago for isolated catastrophic events into a rough-and-ready climate retreat policy.<sup>63</sup> The HMGP buyout program originates from the Stafford Disaster Relief and Emergency Assistance Act of 1974, which disburses emergency appropriations to states and

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59. ROBERT FREUDENBERG, ELLIS CALVIN, LAURA TOLKOFF & DARE BREWLEY, BUY-IN FOR BUYOUTS: THE CASE FOR MANAGED RETREAT FROM FLOOD ZONES 28–29 (2016) (describing a New York coastal neighborhood that organized to lobby for a buyout from the state).

60. See *infra* notes 255–256.

61. See generally Ruhl & Craig, *supra* note 19 (advocating a more fundamental policy reorientation toward climate change).

62. For more detail on the political dynamics that have elevated buyouts in climate retreat policy, see *infra* Part I.C.

63. In its 2015 Guidance, FEMA explicitly recognized the role of hazard mitigation grants in promoting adaptation to climate change and suggested a natural connection between the concepts of resilience and hazard mitigation. See FEMA, HAZARD MITIGATION ASSISTANCE GUIDANCE 2 (2015) [hereinafter FEMA, GUIDANCE] (“The concept of resilience is closely related to the concept of hazard mitigation, which reduces or eliminates potential losses by breaking the cycle of damage, reconstruction, and repeated damage.”).

localities in the wake of disasters.<sup>64</sup> Another buyout law, the FEMA Building Resilient Infrastructure and Communities (“BRIC”) program, arises under an amendment to the Stafford Act, and HUD’s major buyout program, the Community Development Block Grant-Disaster Relief (“CDBG-DR”) program, is subject to some of the requirements of the Stafford Act.<sup>65</sup>

Retrofitting disaster programs offers an existing framework of law and a politically discreet means to address exigent relocation needs. Disaster law and climate retreat also share certain goals and expertise that enable disaster law to function as a partial substitute for climate retreat policy. Both seek to provide relief and minimize loss of life and property from hazardous occurrences and events.<sup>66</sup> FEMA has long focused on disaster preparedness and has a growing emphasis on funding risk mitigation via flood-control technologies, natural buffers, and elevation of buildings and infrastructure.<sup>67</sup> In its 2015 Guidance, FEMA suggested a natural connection between hazard mitigation grants and increasing resilience to climate change, noting that “[t]he concept of resilience is closely related to the concept of hazard

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64. FEMA also promulgated the BRIC program pursuant to the Disaster Recovery Reform Act of 2018. *See* FEMA, *Building Resilient Infrastructure and Communities*, *supra* note 50. The CDBG-DR program arises under Title I of the Housing and Community Development Act of 1974 but is specifically reserved for disaster recovery. 42 U.S.C. § 5306(c); HUD, *Community Development Block Grant Disaster Recovery Program*, [https://www.hud.gov/program\\_offices/comm\\_planning/cdbg-dr](https://www.hud.gov/program_offices/comm_planning/cdbg-dr) [<https://perma.cc/W8P8-USX3>], (last updated July 15, 2022). Only the FMA program is not specific to disasters and instead arises under the National Flood Insurance Act. 42 U.S.C. § 4104c.

65. Section 1234 of the Disaster Recovery Reform Act, which amended the Stafford Act, addresses predisaster hazard mitigation, including by creating a funding set-aside for predisaster mitigation measures. 42 U.S.C. § 5133(b). The CDBG-DR arises from Title I of the Housing and Community Development Act but is subject to the Stafford Act’s prohibitions against duplication of disaster benefits. *See* 42 U.S.C. § 5155 (prohibiting persons, businesses, and other entities from obtaining disaster relief when they have already received financial assistance from another program, insurance, or any other source).

66. *Cf.* Daniel A. Farber, *Catastrophic Risk, Climate Change, and Disaster Law*, 16 ASIA PAC. J. ENV’T L. 38, 38–48 (2013) (examining interaction between disaster law frameworks and climate change).

67. *See* FEMA, *National Preparedness*, <https://www.fema.gov/emergency-managers/national-preparedness> [<https://perma.cc/T76M-JRES>]; NATURE CONSERVANCY, *PROMOTING NATURE-BASED HAZARD MITIGATION THROUGH FEMA MITIGATION GRANTS* 3, 5–9 (2020), <https://www.nature.org/content/dam/tnc/nature/en/documents/Promoting-Nature-Based-Hazard-Mitigation-Through-FEMA-Mitigation-Grants-05-10-2021-LR.pdf> [<https://perma.cc/6TLP-MZMF>].

mitigation, which reduces or eliminates potential losses by breaking the cycle of damage, reconstruction, and repeated damage.”<sup>68</sup>

There are also fiscal and political advantages to housing climate retreat funding within disaster law. Major floods trigger large congressional appropriations, as well as public support for government spending to assist disaster victims.<sup>69</sup> Importantly, funding climate retreat via programs that administer multiple forms of relief, including funds for rebuilding in place, reduces the political visibility of climate retreat. Government programs for residential relocation, even voluntary relocation, are politically incendiary, and agencies are undoubtedly leery of titling programs as “climate retreat.”<sup>70</sup> Also, for some presidential administrations, explicitly acknowledging climate change and its growing impacts is taboo.<sup>71</sup>

Despite its capacity for retrofitting, disaster law is far from the optimal frame for climate retreat. Climate retreat seeks to shift people and infrastructure out of harm’s way, while disaster law has historically funded state and local recovery from disasters by rebuilding in place, and largely continues to do so today.<sup>72</sup> The major disaster provisions of the Stafford Act and Disaster Recovery Reform Act, the statutory home of most federal buyout programs, redress individual and community harms from disaster through financial assistance and rebuilding.<sup>73</sup> FEMA’s National Planning Framework for Disaster

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68. FEMA, GUIDANCE, *supra* note 63.

69. Disaster experts refer to the immediate postdisaster period as a window of opportunity for changing legal rules and policies. *See, e.g.*, Joern Birkmann, Philip Buckle, Jill Jaeger, Mark Pelling, Neysa J. Setiadi, Matthias Garschagen, Nishara Fernando & Jürgen Kropp, *Extreme Events and Disasters: A Window of Opportunity for Change? Analysis of Organizational, Institutional, and Political Changes, Formal and Informal Responses After Mega-Disasters*, 55 NAT. HAZARDS 637, 637–42 (2010).

70. The highly controversial nature of government-sponsored loss of residences is a major impediment to crafting comprehensive climate retreat policy.

71. *See, e.g.*, Scott Waldman, *Trump Officials Deleting Mentions of ‘Climate Change’ from U.S.*

*Geological Survey Press Releases*, SCIENCE (July 8, 2019), <https://www.science.org/news/2019/07/trump-officials-deleting-mentions-climate-change-us-geological-survey-press-releases> [<https://perma.cc/R7F9-NE7A>].

72. *See* Carolyn Kousky, *Managing Shoreline Retreat: A US Perspective*, 124 CLIMATIC CHANGE 9, 15 (2014).

73. *See* 42 U.S.C. §§ 5170a–c, 5172; *see also* FEMA, *Hazard Mitigation Grant Program*, <https://www.fema.gov/grants/mitigation/hazard-mitigation> [<https://perma.cc/4TJP-TZYN>] (stating that the program’s goal is to provide funding and support so that jurisdictions can “rebuild in a way that reduces, or mitigates, future disaster losses in their communities”).

emphasizes disaster preparedness rather than avoidance.<sup>74</sup> Notably, with the Disaster Recovery Reform Act and shifts in agency funding priorities, both Congress and FEMA are signaling growing interest in disaster avoidance and risk mitigation.<sup>75</sup> However, these projects, including those funded under the new BRIC program, often mitigate risks in place so that residents can remain.<sup>76</sup>

Disaster law also pays uneven attention to the potential incentive effects from disaster relief.<sup>77</sup> For example, most disaster relief requires a state or local contribution, or cost share, in order to put “skin in the game” and increase costs for states and localities who permit development in flood zones.<sup>78</sup> However, in some cases the state or locality does not pay a substantial cost share because another federal agency, usually HUD, contributes the 25 percent required state/local cost share.<sup>79</sup>

The limited attention to incentives in disaster buyouts made more sense when natural disasters were lower frequency events and it was

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74. There is a section on prevention, but it addresses terrorism only. See FEMA, *National Planning Frameworks*, <https://www.fema.gov/emergency-managers/national-preparedness/frameworks> [<https://perma.cc/W6WX-T3W9>] (including frameworks for prevention, protection, mitigation, response, and recovery); FEMA, *FEMA Strategic Plan*, <https://www.fema.gov/about/mission> [<https://perma.cc/TP4L-DNT7>] (stating FEMA’s mission is “helping people before, during, and after disasters”).

75. The Disaster Recovery Reform Act of 2018 and FEMA’s expansion of the former Pre-Disaster Mitigation Program into the better-funded Building Resilient Communities Program suggest disaster law is increasingly aware of the importance of prevention and the pitfalls of a primary governmental focus on response. Pub. L. No. 115-254, Div. D, 132 Stat. 3438 (to be codified in scattered sections of 42 U.S.C. §§ 5121, 5122, 5161a, 5174a, 5174b, 5189h, 5196g, 5205a and amending §§ 3149, 5122, 5133, 5149, 5152, 5155, 5165, 5165b, 5170a-c, 5172, 5174, 5187, 5189a, 5189f, 5205); FEMA, *Building Resilient Infrastructure and Communities*, *supra* note 50.

76. See FEMA, *Building Resilient Infrastructure and Communities*, *supra* note 50 (noting FEMA supports local communities’ mitigation efforts to reduce natural disaster risk).

77. While there is increasing government interest in risk mitigation, disaster law and most federal buyout laws on the whole have neglected how federal disaster funds affect local and individual incentives for climate risk-taking. One exception is the Flood Mitigation Assistance buyout program, a small program that operates under the NFIP rather than a disaster statute and requires that acquired homes have flood insurance when the locality submits the application for buyout funds. 44 C.F.R. § 78.12(a) (2022).

78. See, e.g., 42 U.S.C. § 5170c(a) (stating that the president may only contribute up to 75 percent of hazard mitigation costs). This should reduce moral hazard behavior, meaning the tendency to increase risk-taking when the costs of such behavior are borne by another. John M. Marshall, *Moral Hazard*, 66 AM. ECON. REV. 880, 880 (1976).

79. See Wiley & Kousky, *supra* note 8, at 63 (describing use of HUD funds and variation in state approaches to cover the local cost share and advocating Congress waive the cost-share requirement altogether).

difficult to predict their timing or, in some cases, location.<sup>80</sup> Today, climate change, with its predictable sea- and river-level rise, and technological advances in measuring flood risk and forecasting storms have increased the foreseeability of flooding.<sup>81</sup> As a result, there is a more substantial role for government disaster policy to play in structuring incentives for avoidance and retreat.

In summary, climate retreat from severe flood areas has moved from academic debate to reality, through the vehicle of federal buyout programs. The disaster frame of buyout laws is politically and administratively expedient, but a suboptimal policy fit for climate retreat's goals. The next Part delves more deeply into how federal buyout laws, in part because of their disaster law origins, focus on dispossession relief and not only neglect incentives for risky housing, but create them.

## II. DISPOSSESSION VERSUS EFFICIENCY: WHEN BUYOUTS INCREASE BUY-IN

Climate retreat confronts the dual goals of remedying individuals' climate-induced dispossession and incentivizing population shifts to higher ground. Buyout laws vacillate between these two goals but place more emphasis on providing dispossession relief for owners. Although the HMGP's stated purpose is to mitigate hazard risk and increase community resilience,<sup>82</sup> its legal structure and individual provisions prioritize making homeowners as whole as possible—and in doing so, create incentives for residential settlement in floodplains. Buyouts offer homeowners generous compensation, often at pre-flood fair market value, ultimately subsidizing private risk-taking in housing with public funds. Moreover, buyouts do not necessarily aid the neediest and are economically regressive in multiple respects.

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80. Cf. Carolyn Kousky, Howard Kunruether, Michael LaCour-Little & Susan Wachter, *Flood Risk and the U.S. Housing Market*, 29 J. HOUS. RSCH., at S4–8, S18–19 (2020) (describing predicted flooding increases induced by climate change and proposing policies to increase insurance uptake by homeowners).

81. JOHN ENGLANDER, *MOVING TO HIGHER GROUND: RISING SEA LEVEL AND THE PATH FORWARD* 12–15 (2021).

82. See 42 U.S.C. § 5170c(a) (authorizing federal financial support for state and local hazard mitigation that the “President has determined [is] cost effective and which substantially reduce[s] the risk of, or increase[s] resilience to, future damage, hardship, loss, or suffering in any area affected by a major disaster”).

A. *Dispossession Bias in Buyout Law*

Because buyouts emanate from disaster law, they focus on asset compensation and emergency aid. Thus, buyouts promote dispossession bias, meaning that buyouts subordinate large-scale residential movement into flood-safe areas to the goal of remedying individual climate-induced dispossession.<sup>83</sup> Conflicts between providing individual dispossession relief and incentivizing climate-safe settlement usually resolve in favor of the former. Dispossession bias is also evident in other laws related to floodplain housing, such as the NFIP's subsidization of rebuilding flood-prone properties.

Key features of the HMGP and other FEMA buyout laws reflect the priority accorded to dispossession relief. First, buyouts are generously compensatory, usually offering owners full, pre-flood market value for their homes.<sup>84</sup> Some buyouts offer additional compensation *above* fair market value for relocating within the community or accepting the buyout within a specific time frame.<sup>85</sup> While the NFIP caps payouts at \$250,000, the HMGP and other federal buyout programs do not.<sup>86</sup> This level of compensation may be necessary to persuade owners to sell, but this is unknowable because the statute has never required partial compensation or bidding to reveal owners' reserve prices. There is no equivalent to a coinsurance requirement for buyouts. If owners have received an NFIP insurance payout for the flood event, however, that is deducted from their buyout compensation.<sup>87</sup> Only one buyout regulation, the Flood Mitigation Assistance program, requires that the owners of acquired properties

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83. This bias exists within the HMGP as well even though the statutory purpose of the HMGP is to fund hazard mitigation measures and increase resilience to future damage. 42 U.S.C. § 5170c(a).

84. The jurisdiction applying for funding can opt to pay current market value or pre-flood market value but usually chooses the latter. *See* FEMA, GUIDANCE, *supra* note 63, at 22–23. *But see* Caroline M. Kraan, Miyuki Hino, Jennifer Niemann, A.R. Siders & Katharine J. Mach, *Promoting Equity in Retreat Through Voluntary Property Buyout Programs*, 11 J. ENV'T STUD. & SCI. 481, 484 (2021) (describing factors that can lead to undercompensation for lower-income households).

85. *See, e.g.*, Kousky, *supra* note 72, at 16 (discussing the incentive payments following Hurricane Sandy).

86. However, because cost-benefit analysis is mandatory, projected housing acquisition costs do factor into the selection of local applications for buyout funds. *See* 44 C.F.R. § 206.434(c)(5) (2022) (requiring cost-benefit analysis for hazard mitigation grant funding).

87. *See* FEMA, GUIDANCE, *supra* note 63, at 31 (prohibiting duplication of benefits).

have flood insurance at the time of the state or local application for buyout relief.<sup>88</sup> Notably, in some states it is not clear whether buyouts are legally necessary to acquire permanently flooded homes because state “public trust doctrines” grant title in submerged land to the state on behalf of its citizens and prohibit private ownership of navigable waters.<sup>89</sup>

Second, residents must voluntarily acquiesce to buyouts, consistent with the notion that buyouts should compensate for dispossession, not cause it. Federal regulations stipulate that the local or state government administering the buyout cannot use, or threaten, eminent domain for buyouts.<sup>90</sup> In some cases, however, local floodplain management regulations required by FEMA in effect can force buyouts on lower- and middle-income owners by requiring unaffordable whole-home elevation, a point to which Part VI returns.<sup>91</sup> The prohibition on eminent domain undermines adaptation measures that require assembling large, contiguous parcels of land (e.g., green space flood buffers). Also, if adaptation technology develops or funding becomes available after the initiation of a buyout, but before its completion, the locality likely cannot use eminent domain to

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88. 44 C.F.R. § 78.12(a) (2020).

89. As climate change submerges more private land and shifts high and low tide lines, there is increasing conflict and litigation about whether private owners can lose property rights under the public trust doctrine. See Christopher Flavelle, *The Fighting Has Begun over Who Owns Land Drowned by Climate Change*, BLOOMBERG (Apr. 25, 2018, 4:00 AM) [hereinafter Flavelle, *The Fighting Has Begun*], <https://www.bloomberg.com/news/features/2018-04-25/fight-grows-over-who-owns-real-estate-drowned-by-climate-change> [https://perma.cc/UF4T-Y6NR]. For examples of the public trust doctrine, see, for example, ALASKA CONST. art. VIII, § 6; HAW. CONST. art. XII, § 4; VA. CONST. art. XI, § 3; MASS. GEN. LAWS ANN. ch. 91, § 18C(k). States vary in the scope, rigor, locus of lawmaking, and ease of alteration of their public trust doctrines, as well as in whether the doctrines operate under a “title theory” that vests title in public trust property in the state as trustee or instead require by statute or constitution that the state reserve certain resources exclusively for public uses. See Thomas W. Merrill, *The Public Trust Doctrine: Some Jurisprudential Variations and Their Implications*, 38 U. HAW. L. REV. 261, 261–63 (2016).

90. 44 C.F.R. § 80.13(a)(4) (2022).

91. If the flood event has caused damage to a home equaling or exceeding 50 percent of the structure’s market value, the homeowner may need to complete a very costly elevation of their entire home and other floodproofing measures in order to reconstruct. For the substantial damage rule to apply, the cost of repair must exceed 50 percent of the market value of the structure (not including the land), the home must be in a Special Flood Hazard Area (“SFHA”), the locality must have adopted the NFIP rules, and the structure must not meet the base flood elevation required by the NFIP per the relevant flood insurance rate map (thus requiring elevation). See 44 C.F.R. § 60.3(c), (e) (2022) (listing NFIP local regulations); 44 C.F.R. § 59.1 (2022) (defining substantial damage).

accommodate that adaptation project in the area where it is acquiring properties.<sup>92</sup>

Third, the selection of buyouts is based on local application, usually following a federally defined disaster, not a ranking or prioritization of the most climate- or cost-effective locales in which to invest buyout funds. There is a cost-benefit analysis that localities must meet for properties worth more than FEMA's calculation of the average benefit produced by a buyout (homes valued at or below this figure automatically satisfy cost-benefit analysis).<sup>93</sup> Cost-benefit analysis only requires that the buyout cost less than the total anticipated flood damage to a residence over a hundred-year period.<sup>94</sup> The agencies also consider in the benefit column any ecosystem services, such as water filtration or storm buffering, added by preserving the formerly residential land as open space.<sup>95</sup> If the core aims of buyouts were efficient climate retreat and hazard mitigation, we would expect federal agencies to incorporate information about an individual property's flood history or flood risk data (now available via the NFIP Risk 2.0 database) to formally prioritize properties for compensation.<sup>96</sup>

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92. It is possible for the locality to use eminent domain after the buyout project closes for adjacent or nearby adaptation projects as the prohibition on eminent domain applies specifically to the application and buyout process. *See* 44 C.F.R. § 80.13(a)(4) (2022) (requiring subapplicant to inform the applicant in writing it will not use eminent domain authority for open space purpose).

93. *See* Memorandum from Kayed I. Lakhia, Deputy Dir., FEMA, to Reg'l Adm'r's (Regions I–X) 2 (Sept. 29, 2021), [https://www.fema.gov/sites/default/files/documents/fema\\_acquisition-elevation-precalsulated-benefits-memo\\_092021.pdf](https://www.fema.gov/sites/default/files/documents/fema_acquisition-elevation-precalsulated-benefits-memo_092021.pdf) [<https://perma.cc/TW4X-FSGP>].

94. *See, e.g.*, FEMA, SUPPLEMENT TO THE BENEFIT-COST ANALYSIS REFERENCE GUIDE 1-1, 2-17 to -20 (2011), [https://www.fema.gov/sites/default/files/2020-08/fema\\_bca\\_guide-supplement.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_bca_guide-supplement.pdf) [<https://perma.cc/YU4X-JNKR>] (demonstrating how FEMA performs a benefit-cost analysis and compares the acquisition costs of a property to the estimated damages from floods for a particular property over a hundred-year period).

95. FEMA, ECOSYSTEM SERVICE BENEFITS IN BENEFIT-COST ANALYSIS FOR FEMA'S MITIGATION PROGRAMS POLICY 2–3 (2020), [https://www.fema.gov/sites/default/files/2020-09/fema\\_ecosystem-service-benefits\\_policy\\_september-2020.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_ecosystem-service-benefits_policy_september-2020.pdf) [<https://perma.cc/SR88-FC8G>].

96. Some local and state authorities do prioritize buyouts based on ecosystem services or cost to the locality. This does not appear to be consistent and, even when intentions exist to prioritize, the pattern of buyouts may not deliver strong flood control or other local benefits because of the location or spatial configuration of acquisitions. *See* Todd K. BenDor, David Salvesen, Christian Kamrath & Brooke Ganser, *Floodplain Buyouts and Municipal Finance*, 21 NAT. HAZARDS REV. 04020020-1, 04020020-2 to -3, 04020020-13 (2020) (explaining how holdouts can create scattered or random buyouts even though contiguous acquisition patterns may be more efficient); NATURE CONSERVANCY, STRATEGIC PROPERTY BUYOUTS TO ENHANCE FLOOD RESILIENCE: CREATING A MODEL FOR FLOOD RISK REDUCTION,



Fourth, buyouts sacrifice climate retreat efficiency to give latitude to localities for development and homeowners for relocation. For example, the federal government does not require the locality to commit to prohibitions on new construction on other, nonacquired floodplain areas within the locality, beyond what is required by the NFIP regulations adopted by the locality.<sup>97</sup> FEMA requires localities receiving HMGP funds or buyouts to prepare and submit a hazard mitigation plan, but that plan may allow other construction in the floodplain.<sup>98</sup> The statutory provisions governing hazard mitigation plans impose largely procedural requirements, mandating that localities consider how to mitigate hazards, ensure public participation, and engage in the process of local planning for hazards.<sup>99</sup> Federal buyout laws also do not require compensated homeowners to commit to relocate to lower-risk housing.<sup>100</sup> These omissions are the result of buyouts' origins in disaster law, predating recognition of climate change, as well as political resistance by localities and states to limiting development and revenue.<sup>101</sup>

Of course, buyouts are not entirely inattentive to climate retreat goals. Buyout laws have effectuated one-by-one relocation on a modest scale, with approximately 45,000 households relocated to date from federally funded buyouts.<sup>102</sup> One qualitative study that interviewed federal and local officials implementing buyouts found that government employees viewed the buyout as mitigating future flood risk on the acquired properties (but owners perceived the buyout as

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COMMUNITY PROTECTION, AND ENVIRONMENTAL GAINS 4 (2019), <https://www.nature.org/content/dam/tnc/nature/en/documents/harveybuyoutsummary.pdf> [<https://perma.cc/2G3T-YV2F>] (showing inefficiently spaced, or checkerboard, pattern of Houston buyouts).

97. See 44 C.F.R. §§ 201.6(a), 201.7(a) (2022).

98. 44 C.F.R. § 201.6(a)(1) (2022).

99. See 44 C.F.R. § 201.6 (2022); FEMA, LOCAL MITIGATION PLAN REVIEW GUIDE 5–28 (2011).

100. There is also no requirement that the owner have flood insurance in order to qualify for HMGP buyouts, even when the homeowner's federally guaranteed mortgage contract makes flood insurance compulsory. States and localities can adopt more stringent relocation requirements if they desire, but most either omit relocation requirements or make flood-safe relocation a nonbinding goal of buyout. See, e.g., ORANGE CNTY, DR-4332 ORANGE COUNTY LOCAL BUYOUT PROGRAM 2 (2020), [https://www.co.orange.tx.us/media/Emergency%20Management/2020/Orange%20County%20BUYOUT%20Program%20Guidelines%20to%20post%2010.05.2020%20\(1\).pdf](https://www.co.orange.tx.us/media/Emergency%20Management/2020/Orange%20County%20BUYOUT%20Program%20Guidelines%20to%20post%2010.05.2020%20(1).pdf) [<https://perma.cc/M848-QQ5N>] (“The program will relocate homeowners and their families to low risk areas outside of the floodplain/floodway . . .”).

101. See *supra* note 46 and Part I.C.

102. Mach & Siders, *supra* note 9, at 1294.

compensation for home loss).<sup>103</sup> FEMA buyouts also require that the acquired land be dedicated and maintained in perpetuity as open space or for recreational or wetlands management uses.<sup>104</sup> However, it is not clear that prohibiting development on acquired land remains a core commitment. In 2018, FEMA proposed allowing private redevelopment of the acquired parcel by the homeowner (via buyback) or a subsequent owner, so long as the reconstruction satisfied new elevation requirements.<sup>105</sup>

### *B. Buyouts as Incentives for Buy-in*

By providing generous compensation for dispossession, buyouts create incentives to overinvest in floodplains real estate. Buyouts offer homeowners de facto insurance payments for home loss, while imposing no premiums or equivalent of individual coinsurance.<sup>106</sup> Incentivizing residents to buy property in flood zones stymies efficient retreat and commits public funds to disaster relief or often ill-fated adaptation efforts to fight rising waters.<sup>107</sup> It also increases total losses from dispossession, as higher population in flood zones will create more displacement over time as the effects of climate change worsen.

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103. Sherri Brokopp Binder, Alex Greer & Elyse Zavar, *Home Buyouts: A Tool for Mitigation or Recovery?*, 29 DISASTER PREVENTION & MGMT. 497, 498–504 (2020).

104. 42 U.S.C. § 5170c(b)(2)(B)(i); 44 C.F.R. § 206.434(e)(1)(i) (2022). No new structures are permissible except for restrooms or public facilities open on four sides. 42 U.S.C. § 5170c(b)(2)(B)(ii)(I)–(II).

105. Christopher Flavelle, *FEMA Proposes Allowing Owners To Rebuild Homes After Taxpayer Buyouts*, INS. J., (Apr. 26, 2018), <https://www.insurancejournal.com/news/national/2018/04/26/487448.htm> [<https://perma.cc/DJM6-89C5>]. In addition, buyouts originating from housing laws such as the Community Development Block Grants allow redevelopment of the flood-prone property, but the similar CDBG-DR (disaster relief) program, also through HUD, requires the land be preserved as open space. See Siders, *supra* note 39, at 243 tbl.1.

106. Specifically, because buyouts provide financial recompense, typically at preflood market value, they lessen the financial losses to the owner. Together with subsidized national flood insurance, buyouts thus increase the incentives for individuals to purchase homes in floodplains and reduce the motivation to avoid flood zones or relocate away from them.

107. The dynamic that ensues with increasing numbers of floodplain home purchases across the United States resembles what Karl S. Okamoto terms “systemic moral hazard.” See Karl S. Okamoto, *After the Bailout: Regulating Systemic Moral Hazard*, 57 UCLA L. REV. 183, 185 (2009) (describing a pervasive imbalance of incentives where each decision maker’s “potential reward for imprudence greatly outweigh[s] his cost”). The barriers to efficient retreat also stem from flood insurance. A 2017 survey of residents affected by Hurricane Sandy found that when given several options, 42 percent of respondents selected “homeowners pay for property damage at their own cost” as the factor most likely to motivate relocation. Bukvic & Owen, *supra* note 21, at 111.

The fact that not all flood-impacted residents receive buyouts reduces the magnitude of incentive distortions but does not eliminate the effect.<sup>108</sup>

Buyouts reduce incentives to anticipate flood risk, as well as to insure against home loss from flooding. If buyers assume the risk of home loss (i.e., no buyouts are available), they are more motivated to anticipate water rise in their target, or current, locations. This encourages consumption of available information, such as FEMA flood information and private risk ratings on major real estate listing sites.<sup>109</sup> Importantly, it creates market demand for more sophisticated private information about an individual parcel's water risk over time and the predicted impact on real estate value. Limiting buyouts and other nonemergency disaster aid also increases the incentive to procure or maintain insurance. The expectation of a government safety net via buyouts and other relief may partly explain why 49 percent of the households in flood zones that lack flood insurance are high and middle income.<sup>110</sup>

Incentive distortion from compensation is painfully evident in studies showing that a significant number of residents use buyout funds to purchase homes in another flood-risk area. A recent empirical study of a large buyout in New York following Hurricane Sandy found that over 20 percent of homeowners bought property in another coastal flood hazard area.<sup>111</sup> This is not an unintended consequence of buyout, but a feature of its design. For example, federal guidance documents advise localities implementing buyouts with HUD CDBG-DR funds to “[e]ncourage resettlement, not out-migration,” to preserve their tax base and suggest that localities offer incentives to resettle in the same community.<sup>112</sup>

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108. Selective buyouts are a form of partial compensation. Partial compensation reduces the magnitude but does not fully negate incentive effects. See Kaplow, *supra* note 15, at 542, 583–84.

109. See Kleimann, *infra* note 214.

110. See Thomas Frank, *Pressure Builds on Congress To Help People Afford Pricey Flood Insurance*, SCI. AM. (Apr. 6, 2021), <https://www.scientificamerican.com/article/pressure-builds-on-congress-to-help-people-afford-pricey-flood-insurance> [<https://perma.cc/63U5-RVE9>] (reporting that “51 percent of homeowners in high-risk areas are low-income”).

111. Devon J. McGhee, Sherri Brokopp Binder & Elizabeth A. Albright, *First, Do No Harm: Evaluating the Vulnerability Reduction of Post-Disaster Home Buyout Programs*, 21 NAT. HAZARDS REV. 05019002-1, 05019002-1 (2020).

112. See HUD, BUYOUT PROGRAM 2 (2013), [https://files.hudexchange.info/resources/documents/Disaster\\_Recovery\\_Buyout\\_Program\\_Design\\_Implementation\\_Toolkit.pdf](https://files.hudexchange.info/resources/documents/Disaster_Recovery_Buyout_Program_Design_Implementation_Toolkit.pdf) [<https://perma.cc/MTY4-4W3M>].

Buyouts distort not only the location and housing investment decisions of compensation recipients, but also those of a much larger group of onlookers (i.e., citizens deciding whether to locate or remain in a floodplain). For these homebuyers and owners, compensation lessens the financial risk of buying or owning coastal or riverine homes.<sup>113</sup> As a result, they are more likely to buy in coastal and other flood-prone areas—decisions that real estate developers readily accommodate. Although buyouts usually become publicly owned open space, not enough land is restricted to make a sizeable dent in housing supply on the floodplains.<sup>114</sup> There would need to be a massive program of buyouts and strict zoning controls on housing in floodplains (e.g., prohibitions on flood zone construction and limiting the supply of multifamily buildings) to preclude mobility.

Government buyouts, which subsidize homeowner losses, also slow market corrections for coastal and other floodplain real estate. Prices are beginning to decline for coastal real estate (although immigration to coastal areas continues to increase).<sup>115</sup> Buyouts, and to an even greater degree subsidized flood insurance, impede the capitalization of climate risk into real estate pricing by reducing financial risk, and thus handicap the marketplace as a regulatory alternative.<sup>116</sup> In many circumstances, risk-based insurance and real estate pricing are able to offer more differentiated and dynamic responses to climate risk than the government is.<sup>117</sup> In addition, buyouts may decrease buyers' perceptions of personal danger from

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113. This occurs because compensation distorts incentives and promotes overinvestment. For a description of these incentive effects in the transition relief literature, see generally Kaplow, *supra* note 15.

114. The current funding and size of buyout programs are modest, with fewer than fifty thousand buyouts to date, and unlikely to be scalable to address the millions who will face inundation across this century. See Mach & Siders, *supra* note 9, at 1294 (reporting the number of buyouts); Hauer et al., *supra* note 1 (finding over thirteen million individuals are threatened with inundation by 2100).

115. See, e.g., Steven A. McAlpine & Jeremy R. Porter, *Estimating Recent Local Impacts of Sea-Level Rise on Current Real-Estate Losses: A Housing Market Case Study in Miami-Dade, Florida*, 37 POPULATION RSCH. & POL'Y REV. 871, 891–93 (2018). But see Justin Murfin & Matthew Spiegel, *Is the Risk of Sea Level Rise Capitalized in Residential Real Estate?*, 33 REV. FIN. STUD. 1217, 1217 (2020) (finding limited price effects of sea-level rise).

116. For a discussion of the effect of subsidized flood insurance on risky development, see PILKEY ET AL., *supra* note 21, at 84–87.

117. The electricity market offers an example of dynamic response in markets, including regulated markets. See Goutam Dutta & Krishnendranath Mitra, *A Literature Review on Dynamic Pricing of Electricity*, 68 J. OPERATIONAL RSCH. SOC'Y 1131, 1135–41 (2017).

floodplain occupation if they interpret the government's decision to compensate, rather than prohibit floodplain development, as an imprimatur of safety.

It is difficult to quantify the effect of buyout laws on flood zone development and buy-in because of the confounding effect of subsidized flood insurance and the relatively limited number of buyouts to date. With respect to flood subsidies, there is empirical evidence that below-market-rate federal flood insurance has increased residential development in floodplains.<sup>118</sup> There is also a vast economic literature finding that in general subsidies for goods and services increase their consumption, in some cases to the detriment of environmental or other interests.<sup>119</sup> Government buyouts of homes in flood zones (i.e., fully subsidized, de facto home loss insurance) should produce similar incentives for overinvestment in flood-prone housing.<sup>120</sup>

In the likely event that buyout funding expands, the incentive problem will increase. Federal funding of buyouts has increased in the past decade, as has the number of locally and state-funded buyouts.<sup>121</sup>

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118. See WALTER A. ROSENBAUM & GARY BOULWARE, AM. INSTS. FOR RSCH., *THE DEVELOPMENTAL AND ENVIRONMENTAL IMPACT OF THE NATIONAL FLOOD INSURANCE PROGRAM: A SUMMARY RESEARCH REPORT 3* (2006), [https://www.fema.gov/sites/default/files/2020-07/fema\\_nfip\\_eval\\_dei\\_summary\\_report.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_nfip_eval_dei_summary_report.pdf) [<https://perma.cc/L4MB-2AP8>] (finding, in the majority of research, that subsidized flood insurance created incentives for the development of coastal areas and wetlands); see also Kenneth J. Bagstad, Kevin Stapleton & John R. D'Agostino, *Taxes, Subsidies, and Insurance as Drivers of United States Coastal Development*, 63 *ECOLOGICAL ECON.* 285, 285 (2006) (“Government intervention in the market, particularly through taxes, subsidies, and insurance, plays a major role in influencing [coastal] development patterns worldwide, and especially in the United States.”).

119. For a description of the economic arguments, see, for example, Norman Myers, *Lifting the Veil on Perverse Subsidies*, 392 *NATURE* 327, 327–28 (1998) (describing both direct government subsidies and failures of government to regulate or price environmental externalities); see also PILKEY ET AL., *supra* note 21, at 89 (arguing that removing communities from low-lying coastal areas would reduce forced “bail out” from taxpayers).

120. The effects of subsidy are well established for a number of government programs addressing climate-related harms. In addition to the studies on flood insurance subsidies, see generally PILKEY ET AL., *supra* note 21, there is also research indicating that government subsidies for wildfire suppression on public lands (i.e., firefighting) increases development on nearby private lands compared to less government intervention. See SHEILA OLMSTEAD, CAROLYN KOUSKY & ROGER SEDJO, U.S. JOINT FIRE SCI. PROGRAM, *WILDLAND FIRE SUPPRESSION AND LAND DEVELOPMENT IN THE WILDLAND/URBAN INTERFACE 7–8* (2012), <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1002&context=jfspresearch> [<https://perma.cc/BN87-EPR9>].

121. See OFFICE OF INSPECTOR GEN., U.S. DEP'T OF HOMELAND SEC., *FEMA NEEDS TO IMPROVE*

A recent, high-profile proposal for flood insurance reform advocated a major expansion of buyouts by granting preflood-fair-market-value compensation to NFIP policyholders when their property damage exceeds 50 percent of home value.<sup>122</sup> A flurry of scholarly work in environmental policy also positions buyouts as the primary policy instrument for climate retreat.<sup>123</sup>

If buyouts, coupled with permanent restrictions on development, could be accomplished for all properties at risk and there were no other lots that could be developed, the incentives for risky housing choice would not be an issue. The at-risk population would be relocated and new development disallowed. No aspect of this is currently true. First, there is not nearly enough funding to offer full, or even partial, market value compensation for the number of properties at risk.<sup>124</sup> As researchers Matthew Hauer, Jason M. Evans, and Deepak Mishra, who model climate risk and population trends, observe, “managed retreats have tended to involve small populations and areas, but future action could be needed in areas . . . with much larger and growing populations.”<sup>125</sup> Also, not all buyout programs prohibit redevelopment of purchased lots, and future development is often possible on other flood-prone lots outside the buyout area.

Second, pervasive regulatory failure and constitutional compensation requirements prevent zoning out residences on floodplains. Rezoning to prohibit existing residences would require localities to pay just compensation under the Fifth Amendment, a financial nonstarter in most cases.<sup>126</sup> For new construction, localities are reluctant to zone out development and forgo tax revenues and

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OVERSIGHT AND MANAGEMENT OF HAZARD MITIGATION GRANT PROGRAM PROPERTY ACQUISITIONS 1 (June 22, 2022), <https://www.oig.dhs.gov/sites/default/files/assets/2022-06/OIG-22-46-Jun22.pdf> [<https://perma.cc/RJ84-KEN2>] (describing an increase in federal funding); Peterson et al., *supra* note 48, at 15 (describing the “recent trend” toward increasing state and local buyout funding).

122. WEBER & MOORE, *supra* note 11, at 16, 22 n.49.

123. See, e.g., *supra* notes 7, 9, 11 (citing research that addresses managed retreat as climate adaptation policy).

124. Cf. Henry P. Huntington, Eban Goodstein & Eugénie Euskirchen, *Towards a Tipping Point in Responding to Change: Risking Costs, Fewer Options for Arctic and Global Societies*, 41 *AMBIO* 66, 67 (2012) (concluding that “government policy for climate-driven economic dislocation” is unlikely to be generous in light of limited funding for other economic events, such as urban decline or military base closings).

125. Hauer et al., *supra* note 1, at 693 (footnotes omitted).

126. U.S. CONST. amend. V.

development fees, particularly for lucrative coastal development.<sup>127</sup> Of course, if localities paid the full cost of local flood damage, they would typically seek to restrict development where the costs of flooding exceed tax revenues. However, the federal and state governments provide most of the funding for disaster relief and major infrastructure projects, creating an incentive mismatch between localities who gain revenues from floodplains development and the federal and state governments who fund disaster response and risk mitigation for these ill-conceived developments.<sup>128</sup> State regulation also fails to provide a regulatory backstop. Most states are reluctant to intrude on local zoning in floodplains or even to prohibit development in the most severe flood risk zones.<sup>129</sup>

For its part, the federal government is on shaky ground when it attempts to regulate local land.<sup>130</sup> Congress has had to resort to withholding funds for developing certain coastal lands or offering incentives, such as qualifying communities for public flood insurance in exchange for local hazard management.<sup>131</sup> For example, the NFIP requires communities to adopt floodplain management plans for residents to qualify for flood insurance.<sup>132</sup> However, federal regulations for these plans primarily require elevating and floodproofing new construction, except in more strictly regulated floodways (i.e., the channel of the watercourse and its immediate banks).<sup>133</sup> There are also

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127. Kousky, *supra* note 72, at 16 (discussing concerns about managed retreat's effect on the local tax base and possible sources of replacement revenue).

128. See BenDor et al., *supra* note 96, at 04020020-8 to -10.

129. State statutes do sometimes require localities to participate in the NFIP. See, e.g., MINN. STAT. § 103F.165.

130. See U.S. CONST. amend. X.

131. 44 C.F.R. § 60.3(d)(1)–(3) (2022) (requiring localities to restrict development on floodways for residents to be eligible for public flood insurance); see also 16 U.S.C. § 3504 (limiting federal funding on barrier islands and other coastal barrier land).

132. 42 U.S.C. § 4022(a)(2)(A).

133. 44 C.F.R. § 60.3 (2022). The statute calls for regulations that, in turn, call upon localities to:

- (1) constrict the development of land which is exposed to flood damage where appropriate,
- (2) guide the development of proposed construction away from locations which are threatened by flood hazards,
- (3) assist in reducing damage caused by floods, and
- (4) otherwise improve the long-range land management and use of flood-prone areas.

42 U.S.C. § 4102. In addition, under the Coastal Barrier Resources Act, the federal government will not provide federal financial assistance for development in barrier islands and coastal barrier regions, including flood insurance coverage, loans, funding for U.S. Army Corps of Engineers

significant enforcement issues, with research reporting local noncompliance with the NFIP building and other regulations ranging from 15 percent to 42 percent.<sup>134</sup>

Congress could amend the Coastal Barrier Resources Act, which denies federal financial assistance and flood insurance (NFIP) for development in barrier islands and coastal barrier regions, to apply to other areas with severe flood risk.<sup>135</sup> This would limit local access to federal funds and exclude residents in severe flood zones from buyouts and subsidized national flood insurance, forcing them onto the private market. By removing federal financial support, this reform would disincentivize residential settlement in floodplains. However, it appears politically improbable that Congress will preclude federal buyouts and flood insurance in flood-risk areas. Such a change would also impose harms on low-income floodplains residents, a point to which Part V returns.<sup>136</sup>

### C. *The Regressivity of Dispossession Bias*

One justification for remedying dispossession at the expense of climate retreat efficiency would be the potential benefits to vulnerable populations, who face the steepest economic and personal impacts from home loss. To the contrary, buyout laws are quite regressive. First, because buyouts compensate for owned homes, these laws bestow financial compensation for loss on owners, rather than renters. Low-income floodplains neighborhoods have high concentrations of tenants, while owners dominate middle-income and affluent coastal

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development projects, and water, sewage, and transportation infrastructure funding. 16 U.S.C. §§ 3501–3510.

134. MARGARET L. MATHIS & SUZANNE NICHOLSON, AN EVALUATION OF COMPLIANCE WITH THE NATIONAL FLOOD INSURANCE PROGRAM PART B: ARE MINIMUM BUILDING REQUIREMENTS BEING MET?, at viii (2006), [https://www.fema.gov/sites/default/files/2020-07/fema\\_nfip\\_eval\\_community\\_compliance\\_b.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_nfip_eval_community_compliance_b.pdf) [https://perma.cc/BJ6C-LWTM]; JACQUELYN L. MONDAY, KRISTEN Y. GRILL, PAUL ESFORMES & MATTHEW ENG, AN EVALUATION OF COMPLIANCE WITH THE NATIONAL FLOOD INSURANCE PROGRAM PART A: ACHIEVING COMMUNITY COMPLIANCE, at x (2006), [https://www.fema.gov/sites/default/files/2020-07/fema\\_nfip\\_eval\\_community\\_compliance\\_a.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_nfip_eval_community_compliance_a.pdf) [https://perma.cc/J3L8-DWVL].

135. 16 U.S.C. §§ 3501–3510. This Author thanks Heather Payne for this interesting suggestion.

136. See *infra* Part V.



areas.<sup>137</sup> Tenants receive compensation under the Uniform Relocation Act (“URA”) for their moving expenses and the difference between their former rent and new rent for forty-two months, subject to a relatively low cap of \$7200.<sup>138</sup> Outside of the URA, disaster appropriations could be allocated more generously to tenants, but in practice homeowners receive the lion’s share of financial benefits.<sup>139</sup>

Second, the lack of means testing (i.e., selection based on the financial need of affected owners) in buyouts is regressive.<sup>140</sup> The justification for universal eligibility is that buyouts attend to the *fact* of dispossession and goal of relocation. If floods threaten home loss, and necessitate relocation to safer ground, then shouldn’t government compensation be available to all? In fact, the law allows middle- or upper-income owners to receive more federal dollars based on the higher value of their homes, which is an appropriate result if one views buyouts as compensation for residential asset loss but not if one sees buyouts as effectuating fair and efficient climate retreat.<sup>141</sup> On the other hand, lower-value homes are more likely to satisfy cost-benefit analysis due to their lower acquisition costs, which may increase progressivity. Also, it is possible that in practice some states, localities, or federal agencies may mitigate regressivity by prioritizing lower-income residents or communities for buyout funding.<sup>142</sup>

Third, buyouts favor better-resourced localities and states by imposing cost-share requirements and requiring states or localities to

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137. 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. STUD. & SCIS. 420, 422 (2021).

138. 49 C.F.R. § 24.402(a) (2022). The payout can be in installments or a lump sum. 49 C.F.R. § 24.402(b)(3) (2022).

139. See Dundon & Camp, *supra* note 137, at 422–24. A recent study found that homeowners receive more than four times as much CDBG-DR disaster relief funding as renters, primarily because homeowners receive compensation for loss or damage to their homes. JOINT CTR. FOR HOUS. STUD. AT HARV. UNIV., *AMERICA’S RENTAL HOUSING 2022*, at 42 (2022), [https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard\\_JCHS\\_Americas\\_Rental\\_Housing\\_2022.pdf](https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_Americas_Rental_Housing_2022.pdf) [<https://perma.cc/ZKD4-KH33>].

140. An exception to this is that a regulation of the HMGP may decrease the cost share to 10 percent for “small and impoverished communit[ies]”—that is, economically disadvantaged communities with under 3000 residents—and allow regional administrators in “extraordinary circumstances” to allow them to submit their hazard mitigation plan within twelve months following the grant, rather than requiring it in the application. 44 C.F.R. § 206.434(b)(2) (2022).

141. See FEMA, *GUIDANCE*, *supra* note 63, at 22–23.

142. It is possible that the FEMA application process favors lower-value homes because homes valued below the average value of a buyout (\$274,000) do not need to satisfy cost-benefit analysis, while higher-value homes do. Memorandum from Kaye I. Lakhia, *supra* note 93.

apply for funding.<sup>143</sup> The statutory cost-share requirements for the HMGP<sup>144</sup> and other FEMA programs benefit residents of states and localities with more funds. At the extreme, the statute allows affluent owners to fund the 25 percent cost share,<sup>145</sup> a provision that seems likely to motivate funding grabs by upper-income homeowners as flooding worsens. HUD Community Development Block Grants and Disaster Relief Grants sometimes provide all or part of the state or local cost share, and those grants are subject to requirements that 70 percent of funding should benefit low- to moderate-income individuals.<sup>146</sup> However, the CDBG-DR statute includes a waiver provision that is routinely exercised after floods and other disasters to fund owners above the income threshold.<sup>147</sup>

In addition to the cost-share hurdle, localities must provide the personnel and funding to implement buyouts. Localities must apply to FEMA for funds, conduct cost-benefit analyses, and engage in intensive planning culminating in a local hazard mitigation plan.<sup>148</sup> The buyout process takes localities on average more than five years from flood to project closeout.<sup>149</sup> The local government is typically responsible for required disclosures to homeowners, appraisal, purchase negotiation, title transfer, and restricting and maintaining the acquired land as open space. Considering the financial and personnel burdens to localities, it is not surprising that recent research has found

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143. States may also implement buyouts, but in practice the local government usually plays the role of implementer.

144. 42 U.S.C. § 5170c(a).

145. FEMA, HOMEOWNER'S GUIDE TO THE HAZARD MITIGATION GRANT PROGRAM 3 (2016) [hereinafter FEMA, HOMEOWNER'S GUIDE], [https://www.fema.gov/sites/default/files/document/s/fema\\_homeowners\\_guide\\_hazard\\_mitigation\\_grant\\_program\\_11-04-16.pdf](https://www.fema.gov/sites/default/files/document/s/fema_homeowners_guide_hazard_mitigation_grant_program_11-04-16.pdf) [<https://perma.cc/UJ5W-GBCT>].

146. See JOSEPH V. JAROSCAK & MICHAEL H. CECIRE, CONG. RSCH. SERV., R46475, THE COMMUNITY DEVELOPMENT BLOCK GRANT'S DISASTER RECOVERY (CDBG-DR) COMPONENT: BACKGROUND AND ISSUES 1-2, 2 n.5 (2020).

147. 42 U.S.C. § 5321.

148. See 44 C.F.R. § 201.6 (2022) (requiring localities to submit a hazard mitigation plan for HMGP funding); FEMA, BCA REFERENCE GUIDE 3-1 to -7 (2009), [https://www.fema.gov/sites/default/files/2020-04/fema\\_bca\\_reference-guide.pdf](https://www.fema.gov/sites/default/files/2020-04/fema_bca_reference-guide.pdf) [<https://perma.cc/R6RG-U2B2>] (offering guidance on the cost-benefit analysis required for an HMGP application).

149. See WEBER & MOORE, *supra* note 11.

that counties with local buyout programs were wealthier, and whiter, than impacted counties where buyouts did not occur.<sup>150</sup>

In summary, buyouts have focused on providing dispossession relief to flooded homeowners. In doing so, buyouts have exacerbated the problem that compensation was meant to remedy by creating incentives for households to move to climate risk zones (thus increasing total dispossession over time).<sup>151</sup> In addition, federal buyout programs, which provide owner compensation at pre-flood fair market value and require local implementation, are alarmingly regressive and provide limited relief to the most vulnerable floodplains residents, particularly low-income renters.

### III. TRANSITION RELIEF THEORY FOR CLIMATE RETREAT

Scores of articles, government white papers, NGO reports, and state-commissioned studies have examined the implementation, outcomes, and equity of federal buyout programs without considering whether buyouts subsidize risky housing choice.<sup>152</sup> Some researchers fault the moral hazard in subsidized flood insurance, but omit buyouts.<sup>153</sup> Only a few critics, most notably oceanographer and activist John Englander, flag the incentives posed by buyout compensation or consider how to reform buyouts to reduce moral hazard.<sup>154</sup>

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150. See Mach et al., *supra* note 58, at 3, 5–6 (finding comparatively better-off counties were more likely to administer buyouts, but the zip code areas where properties were acquired were relatively poorer); Elliott et al., *supra* note 14, at 12 (showing racial differences). Mach and coauthors suggest that the higher likelihood of buyouts in wealthier counties “may be indicative of the substantial human, financial, and other capacity required for a local government to implement a buyout.” Mach et al., *supra* note 58, at 5. A confounding factor not addressed in the study is demand and the possibility there is more demand for buyouts in affluent counties.

151. The effect of disaster relief on incentives for risk reduction is a pivotal issue for adaptation, extending beyond buyout laws and of major interest in EU flood policy. See, e.g., Jongman, *supra* note 31, at 2 (noting that ad hoc disaster relief in the EU is associated with reduced incentives for risk reduction).

152. See *supra* notes 7–11, 21, 39, 79–80.

153. See Pappas & Flatt, *Climate Changes Property*, *supra* note 11, at 342–49. Pappas and Flatt argue that buyouts lessen “unacceptably high [market] adjustment failure costs” and suggest that market adjustment failure analysis can guide when to recommodify or decommodify property. See *id.* at 387–89. But see Heather Payne, *Rhinoceroses Are Not Like Sneakers*, 82 OHIO ST. L.J. 71, 78–81 (2021) (noting some shortcomings of the market adjustment failure model).

154. See ENGLANDER, *supra* note 81, at 140 (describing the moral hazard created by subsidized flood insurance and noting that buyouts similarly transfer the risk of building on the shore from developers and buyers to the government); see also Wendy Karen Bragg, Sara Tasse Gonzalez, Ando Rabearisoa & Amanda Daria Stoltz, *Communicating Managed Retreat in California*, 13 WATER 781, 791 (2021) (noting the “distorting effect” of buybacks on the real

Outside of the climate retreat scholarship, however, a robust theoretical literature on transition relief has explored how government compensation for changes in legal rules distorts investor incentives. Seminal works in transition relief theory by Michael J. Graetz and Louis Kaplow posit that compensating investors for changes in tax or other legal rules produces losses from overinvestment (incentive distortion) that outweigh the gains from remedying concentrated losses (risk spreading).<sup>155</sup>

This Part describes the classic theory of transition relief and considers its applicability to climate transitions. It suggests applying the lodestars of classic transition relief theory (incentive distortion and risk spreading) to federal flood buyouts and introduces a model of “climate transition relief,” which the balance of the Article develops.

### A. *Classic Transition Relief Theory*

Transition relief theory emanates from law and economics and considers the question of what government action, if any, is necessary when laws change after citizens or regulated entities have made prior commitments based on the former rule.<sup>156</sup> For example, if an individual or business invested in a certain financial instrument based on regulatory laws advantaging that financial instrument or IRS regulations affording it favorable tax treatment, the adoption of new legal rules would injure those who had invested based on the former laws. The intention of transition relief is to mitigate the losses of investors who relied on the previous legal rule when they invested. Transition relief can take the form of compensation, phasing in changes

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estate market); Thomas Ruppert, John Fergus & Enio Russe-Garcia, *Managing Property Buyouts at the Local Level: Seeking Benefits and Limiting Harms*, 48 ENV'T L. REP. 10,520, 10,529 (2018) (suggesting that localities adopt ordinances regulating buyouts and that to address the incentive problems created by buyouts, “maybe a property owner purchasing, or taking title, after passage of a local buyout ordinance [should] either not [be] eligible to participate [in a buyout], or [should] only be eligible for a far lower price offer than a neighbor who had owned for a longer period of time”); cf. E. Barrett Ristroph, *Avoiding Maladaptations to Flooding and Erosions: A Case Study of Alaska Native Villages*, 24 OCEAN & COASTAL L.J. 110, 131–32 (2019) (stating that “[t]he moral hazard problem associated with post-flood bailouts in the United States is more nuanced for [Alaskan Native Villages] and other indigenous communities” because many were forced into flood-prone areas and living together as a tribe is the priority).

155. See generally Graetz, *supra* note 15 (examining the effects of grandfathering changes in income tax rules); Kaplow, *supra* note 15 (arguing that compensation for regulatory change produces overinvestment and decreases investor motivation to anticipate changes).

156. See *supra* note 15.

gradually, grandfathering (i.e., exemption from new regulation), or other benefits offered by the government.<sup>157</sup>

The historical view of legal transitions was that it would be unjust and would unsettle expectations to change a law without offering relief to individuals who had made investments or decisions in reliance on the law in effect at that time.<sup>158</sup> Scholars as well as policymakers have advocated compensating for the disruption of established property rights and other legal rights, on both efficiency and fairness grounds.<sup>159</sup> The tradition of protecting crystallized expectations of legal rights and “reliance interests” is particularly prominent within property law theory. One of the earliest proponents of this view, Hume, deemed stability of property a societal prerequisite, stating that “the convention for the distinction of property, and for the stability of possession, is of all circumstances the most necessary to the establishment of human society.”<sup>160</sup> In a similar vein, Bentham conceived of property as creating a “basis of expectation” requisite to labor and investment.<sup>161</sup> The stabilizing function of property finds

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157. Kaplow, *supra* note 15, at 512.

158. See Richard A. Epstein, *Beware of Legal Transitions: A Presumptive Vote for the Reliance Interest*, 13 J. CONTEMP. LEGAL ISSUES 69, 70 (2003); Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of “Just Compensation” Law*, 80 HARV. L. REV. 1165, 1219 (1967) (offering fairness justifications for compensation). Michelman contended that when individuals experience high losses, the cost of compensation or other transition relief is low (settlement costs), and the social benefits of the regulatory change are limited or uncertain, the government should offer compensation, but not when settlement costs are high and individual losses low. *Id.* at 1215. For an overview of the reliance and fairness theories, see Revesz & Kong, *supra* note 15, at 1585–87.

159. See, e.g., U.S. DEP’T OF TREASURY, BLUEPRINTS FOR BASIC TAX REFORM 187–88, 209–11 (1977); Harold M. Hochman, *Rule Change and Transitional Equity*, in REDISTRIBUTION THROUGH PUBLIC CHOICE 323–24 (Harold M. Hochman & George E. Peterson eds., 1974); Michelman, *supra* note 158, at 1219, 1223–24 (advocating an approach to compensation that considers fairness and the demoralization from lack of compensation); cf. Jill E. Fisch, *Retroactivity and Legal Change: An Equilibria Approach*, 110 HARV. L. REV. 1055, 1105–11 (1997) (arguing a stable legal equilibrium justifies honoring reliance interests while an unstable equilibrium does not because the expectation of stability and reliance is unreasonable in the latter situation).

160. DAVID HUME, TREATISE OF HUMAN NATURE 315–16 (David Fate Norton & Mary J. Norton eds., 2000).

161. See JEREMY BENTHAM, THE THEORY OF LEGISLATION 111–12 (R. Hildreth trans., Trübner & Co. 2d ed. 1924) (1871) (“Property is nothing but a basis of expectation; the expectation of deriving certain advantages from a thing which we are said to possess . . .”). Bentham propounded a positivist view of law with property reflecting “the institutionally established understanding that extant rules governing the relationships among men with respect to resources will continue in existence.” Michelman, *supra* note 158, at 1211–12.

traction among modern theorists as well, also on utilitarian grounds. For example, Abraham Bell and Gideon Parchomovsky define property as creating and enforcing stable ownership that confers value, and Richard Posner describes how stability of property cultivates incentives to invest.<sup>162</sup>

In the 1970s, an influential body of scholarship emerged challenging government compensation on the basis of reliance, expectations, and general notions of fairness. The transition relief literature derives most famously from the work of Michael Graetz advocating against retroactivity, such as grandfathering in or phase-ins, for changes in tax law.<sup>163</sup> Graetz argued that retroactivity increases incentives for overinvestment, reduces the benefits from the tax law change, and increases enforcement costs. In addition, basing transition relief on reliance presumes it is reasonable to expect that laws will not change over time and that reliance interests outweigh the social benefits of the legal change.<sup>164</sup>

Louis Kaplow subsequently extended this analysis beyond tax law to regulatory transition relief. A regulatory transition occurs when investors have based prior commitments on a legal rule and those commitments were made at a time that a new legal rule could not have been predicted with certainty.<sup>165</sup> In his view, transition relief, such as compensation, grandfathering, or phase-ins, “is inefficient because it insulates investors from the real effects of their decisions, and thus distorts their behavior.”<sup>166</sup> Specifically, the assurance of government compensation incentivizes overinvestment in property that may be subject to a legal, or market, change and reduces the incentive for investors to anticipate future legal changes.<sup>167</sup> Accordingly, Kaplow argued that governments should not offer compensation for

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162. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 40–44 (8th ed. 2011); Abraham Bell & Gideon Parchomovsky, *A Theory of Property Law*, 90 *CORNELL L. REV.* 531, 538, 564 (2005). *But see* SHELLY KREICZER-LEVY, *DESTABILIZING PROPERTY* 16–37 (2019) (describing how the emerging sharing economy disrupts the “legal ideal” of property stability).

163. *See* Graetz, *supra* note 15, at 65–66.

164. *See* Kaplow, *supra* note 15, at 513 (examining the “familiar arguments for government transitional relief that rest on appeals to reliance interests and to the lack of expectation of legal change”).

165. *Id.* at 512–13.

166. *Id.* at 513.

167. *Id.* at 615 (“To the extent that a given transition policy mitigates the impact of future reforms on preexisting investment, those currently making investment decisions will not have the proper incentive to take into account the prospects of future reform.”).

transitions, including, for example, compensation for eminent domain or retroactivity following changes in common law tort doctrines.<sup>168</sup> Transition relief theory, like the reliance theories described previously, relies on incentives for investment to justify its conclusions. But while reliance theorists fret that there will be too little incentive to invest without compensation, transition relief theorists predict that compensation will produce too much incentive to invest in the good protected by a current law (because investors will receive compensation for later changes to that law).

Transition relief theory also presumes that private markets are superior to government at achieving the optimal tradeoff between incentive distortion and risk spreading to avoid concentrated losses. Kaplow observes that “[d]irect government compensation differs from private insurance in a number of important respects.”<sup>169</sup> Specifically, “it is provided by the government, it is typically considered to be full (whereas many insurance contracts or other diversification channels only partially spread the risk), no conditions for efficient behavior are bargained for, and no premium need be paid.”<sup>170</sup> As a result, compensation for the incidental losses from legal transitions, as opposed to purposeful social redistribution by the government, amounts to an exceptionally inefficient insurance policy. Because government compensation does not increase risk spreading beyond what the private market would offer, its benefits do not outweigh the losses from incentive distortion.<sup>171</sup>

Responding to Kaplow’s claim that transition relief is inevitably inefficient, Steven Shavell applied the theory’s touchstones of individual loss (risk spreading) and incentive distortion to show that partial transition relief is efficient in certain circumstances.<sup>172</sup> Specifically, grandfathering is preferable to no transition relief for durable goods (e.g., expensive equipment, residential homes) when the individual costs to the investor are greater than the social benefits.<sup>173</sup> Shavell considered firms that had purchased expensive pollution control equipment and homeowners in locations with zoning changes,

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168. *Id.* at 598–606.

169. *Id.* at 541.

170. *Id.* (footnote omitted).

171. *Id.*

172. Shavell, *supra* note 18.

173. *Id.* at 37.

where requiring new purchases or substantial residential retrofitting would be more costly to owners than the marginal social benefit of imposing the new regulation. Shavell noted that in these cases existing laws restrained incentive effects and overinvestment.<sup>174</sup>

Transition relief intersects the related concept of moral hazard from economics and insurance research.<sup>175</sup> Laws create a “moral hazard” when citizens do not bear the full consequences of their risk-taking and thus have an incentive to take more risks and engage in less preventative effort.<sup>176</sup> Research on bank lending, auto insurance, and even experimental work on risky gambles in which participants share losses substantiates the theory that people take more risks when they do not bear the full costs of their actions.<sup>177</sup> To remedy moral hazard, insurers must either improve the insured’s incentives, typically by imposing coinsurance, or engage in costly monitoring. Altering incentives concentrates more risk on insureds and puts their “skin in the game,” but at the cost of reducing risk spreading.<sup>178</sup>

In summary, the transition relief scholarship views government compensation as a tradeoff between individual relief and incentive distortion. Distilling the scholarly contributions of the transition relief literature yields two insights important to the analysis of residential climate transitions. First, the transition relief scholarship establishes the risk of incentive distortion and overinvestment from the reflexive

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174. *Id.*

175. With respect to sea-level rise and residential real estate, moral hazard occurs when people are more likely to buy property in climate danger zones or remain there as flood risk increases. *See* ENGLANDER, *supra* note 81, at 140.

176. *See* Steven Shavell, *On Moral Hazard and Insurance*, 93 Q.J. ECON. 541, 541 (1979) (“Moral hazard refers here to the tendency of insurance protection to alter an individual’s motive to prevent loss.”). Moral hazard first appeared in the economics literature to describe increased expenditures due to the insured’s eligibility for insurance benefits that create deadweight losses by encouraging the insured to seek additional services after marginal benefit drops below marginal cost. *See* Marshall, *supra* note 78; David Rowell & Luke B. Connelly, *A History of the Term “Moral Hazard”*, 79 J. RISK & INS. 1051, 1059 (2012) (noting insurance induces individuals to invest less in prevention).

177. *See* Michael T. Bixter & Christian C. Luhmann, *Shared Losses Reduce Sensitivity to Risk: A Laboratory Study of Moral Hazard*, 42 J. ECON. PSYCH. 63, 69–71 (2013); Shavell, *supra* note 176, at 541, 551.

178. As researcher John M. Marshall writes, “It is widely recognized that the cost of improving incentives [by making insureds pay higher coinsurance rates] is inevitably a reduction in the efficiency of risk spreading.” Marshall, *supra* note 78, at 890; *see also* Bixter & Luhmann, *supra* note 177, at 64 (defining moral hazard as “any situation where an individual or institution is making decisions that have potential negative consequences that will be fully or partially shared with other parties”).



disbursement of government transition relief.<sup>179</sup> Second, the literature illuminates factors that are important to the efficiency of transition relief, including the magnitude of incentive distortion versus risk spreading, the costs and social benefits of the change in question, and the presence or likelihood of emerging private markets for risk spreading. These theoretical contributions offer a starting place for reconceiving buyouts but also have limitations when applied to economically heterogeneous floodplains and the project of climate retreat, as Parts V and VI address.

### *B. Flood Buyouts as Climate Transition Relief*

Classic transition relief theory offers a conceptual springboard for re-envisioning flood buyouts as a climate transition policy that balances the incentive for buying into flood zones against remedying individual losses. Just as transitions occur when tax rules and regulations change, flooding creates legal transitions for affected residents. Rising water alters property rights in a number of ways under state property laws.<sup>180</sup> The public trust doctrine, which operates under state constitutional, statutory, or common law, grants title in submerged lands to the state.<sup>181</sup> Currently, there is uncertainty and conflict about whether homeowners whose lot or home becomes partially or fully submerged lose their property rights to the state.<sup>182</sup> When water shifts, private owners may also suffer public access across the “wet sand” portions of their property under the common law or, in Texas, a statute mandating “rolling easements” in the public.<sup>183</sup> Climate change has also affected development rights, with localities and regional coastal commissions in

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179. See generally Kaplow, *supra* note 15 (noting incentive distortion from compensation for regulatory change); Graetz, *supra* note 15 (noting incentive problems from grandfathering when tax laws change).

180. For an overview of how flooding and managed retreat change property rights, see Laura M. Padilla, *Does a Rising Tide Lift All Boats? Sea Level Rise, Land Use, and Property Rights*, 51 TEX. ENV'T L.J. 27, 94–104 (2021) (describing how using downzoning, rolling easements, the public trust doctrine, and transferable development rights to accomplish managed retreat changes property rights and raises controversy).

181. See Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 463–64 (1892) (holding that Illinois could not convey title to submerged lands to a private corporation as the title was held in trust by the state for the public).

182. See Flavelle, *The Fighting Has Begun*, *supra* note 89.

183. TEX. NAT. RES. CODE ANN. § 61.011(a); *Severance v. Patterson*, 370 S.W.3d 705, 732 (Tex. 2012) (noting that “public easements in the dry beach . . . are dynamic, as natural forces cause the vegetation and the mean high tide lines to move gradually and imperceptibly”).

some cases restricting further development of residential property (e.g., expansions or additions) and debating prohibitions on rebuilding after a major inundation.<sup>184</sup> In addition, flood insurance law is beginning to phase out subsidies and increase premiums, subject to grandfathering provisions applicable to residential policies that predate certain changes in the NFIP.<sup>185</sup>

In addition to legal changes, homeowners on floodplains are subject to market transitions due to the capitalization of climate risk into real estate prices. As Kaplow notes, market shifts are “analytically equivalent” to legal transitions, and government compensation for market changes has the same effect as legal transition relief on investment and incentive distortion.<sup>186</sup> Because real estate markets capitalize flood risk into home prices, increasing numbers of owners owe more than their homes are worth or will lose money on a future sale. These market changes injure the interests of homeowners, much like changes to legal rules, and raise the question of whether the government should offer transition relief.

This Article reconceptualizes buyouts from dispossession compensation to a climate transition relief policy that is conscious of incentive structure and context sensitive. It retains classic transition relief theory’s distillation of compensation’s effects on incentive distortion and risk spreading (concentrated losses). However, as Parts IV and V discuss, these factors play out differently on the heterogeneous floodplains based on resident wealth. While buyouts create incentives for middle- and higher-income owners, with means and mobility, to locate in the floodplains, low-income owners are far less vulnerable to incentive distortion from compensation. Affordability, not choice, usually drives their location in riverine floodplains and wetlands.<sup>187</sup>

Climate change also requires a broader scope than classic transition relief theory’s focus on owner-investors. On the income-bifurcated floodplains, not only owners but also tenants suffer

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184. See JESSICA GRANNIS, GEO. CLIMATE CTR., ADAPTATION TOOLKIT: SEA-LEVEL RISE AND COASTAL LAND USE 31–32 (2011), [https://www.georgetownclimate.org/files/report/Adaptation\\_Tool\\_Kit\\_SLR.pdf](https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf) [<https://perma.cc/XMF5-UQDT>].

185. See Moving Ahead for Progress in the 21st Century Act, Pub. L. No. 112-141, § 100205, 125 Stat. 405, 917 (2012); FEMA, NATIONAL FLOOD INSURANCE PROGRAM: FLOOD INSURANCE MANUAL 1-2, 3-7 to -8 (2021), [https://www.fema.gov/sites/default/files/documents/fema\\_nfip-flood-insurance-manual-sections-1-6\\_oct2021.pdf](https://www.fema.gov/sites/default/files/documents/fema_nfip-flood-insurance-manual-sections-1-6_oct2021.pdf) [<https://perma.cc/2VZ9-3VBQ>].

186. See Kaplow, *supra* note 15, at 582.

187. See *infra* Part V.

residential dislocation from flooding. Flood transitions will sometimes require subsidy outside the frame of asset ownership and loss contemplated in classic transition relief theory. Part VI advocates buyout funding for renters, as well as subsidies in some circumstances.

#### IV. CLIMATE TRANSITION RELIEF: LIMITING ELIGIBILITY FOR COMPENSATION

Viewing buyouts as a questionable form of transition relief raises fundamental questions. First, should homeowners receive relief for home loss caused by climate-induced flooding? And if so, should we extend relief to all affected owners or only to specific subgroups? This Part contends that the tradeoffs between individual dispossession relief and the more impactful goal of incentivizing larger-scale shifts out of flood zones counsel against unrestricted transition relief. Contrary to the weight of policy and scholarly analysis, this Article advocates as a starting place a presumption against gratis buyouts for middle- and upper-income homeowners (the next Part discusses a substantial carve-out to this presumption for low-income residents via means testing). This Part also considers potential exceptions to a no-compensation rule for middle- and upper-income owners, including when flooding threatens grave physical harm, and the possibility of insurance for relocation. Of note, this Part describes income groups in general terms and leaves to policymakers the specific demarcation of income levels eligible for buyouts.

##### A. *Incentives and Risk Spreading*

For transition relief to distort location decisions, households must have control over where they locate. Higher-income households are more likely to have the financial means and access to lending markets to choose whether or not to purchase in flood-safe zones. In general, these households tend to move greater distances—an important point for retreat from floodplains. For example, demographic research consistently finds that higher-income households are more likely to move out of a county or state, while lower-income households are more likely to relocate within the same county.<sup>188</sup> Of course, this does not mean that flood-safe location choices are costless for higher-income

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188. See, e.g., DAVID K. IHRKE & CAROL S. FABER, U.S. DEP'T OF COM., GEOGRAPHICAL MOBILITY: 2005 TO 2010, at 5 tbl.2 (2012), <https://www.census.gov/content/dam/Census/library/publications/2012/demo/p20-567.pdf> [<https://perma.cc/QX78-8GSS>] (comparing move rates by income group).

households. Employment, commute time, or personal attachments may underlie preferences for riskier locations. In some cases, higher-income owners can satisfy these preferences by purchasing higher-elevation properties within coastal areas, a practice referred to as “climate gentrification.”<sup>189</sup>

The precise magnitude of the effect of buyout compensation on middle- and upper-income households’ incentives for high-risk housing is an empirical question, one that is fiendishly difficult to untangle.<sup>190</sup> As discussed previously, there is evidence that another form of government relief, subsidized public flood insurance, correlates with increasing residential development in floodplains.<sup>191</sup> Of course, government compensation affects behavior on average, not universally. For example, ultrahigh-net-worth individuals can absorb losses on coastal real estate and appear willing to when the locale boasts attractive oceanfront amenities or favorable state tax laws.<sup>192</sup>

The other focal point of transition relief is the magnitude of concentrated loss, meaning the degree to which an investor can spread risk.<sup>193</sup> While the NFIP has not proven nearly as efficient as the private insurance markets envisioned by Kaplow and other transition relief scholars, it is accessible to upper-income and most middle-income households. The heavily subsidized NFIP has an average annual policy premium of approximately \$700 and delivers the most subsidy to higher-income households, who are more likely to purchase NFIP

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189. See Jesse M. Keenan, Thomas Hill & Anurag Gumber, *Climate Gentrification: From Theory to Empiricism in Miami-Dade County, Florida*, 13 ENV’T RSCH. LETTERS, Apr. 23, 2018, 1, 2–4 (explaining climate gentrification).

190. It is the opacity of incentive effects that generally solidifies the superiority of the private insurance market for risk spreading because insurers have the motivation and resources to answer such questions.

191. See ROSENBAUM & BOULWARE, *supra* note 118, at 3–4, 66.

192. See Katie Warren, *Miami Could Be Underwater Within 80 Years, but Rich People Keep Buying Luxury Waterfront Homes—and Local Experts Say There’s a Simple Explanation for It*, BUS. INSIDER (Mar. 10, 2019, 10:15 AM), <https://www.businessinsider.com/miami-luxury-real-estate-market-home-sales-sea-levels-underwater-2019-3> [<https://perma.cc/TQJ7-XXJE>].

193. The dynamic described by Kaplow, where investors eschew private insurance markets, which are better at calibrating the balance between incentives and risk spreading, in favor of government-funded transition relief, differs somewhat in the case of flooding. The subsidization of public flood insurance has diminished private flood options and, unfortunately, has failed to confer the efficiency benefits envisioned for private risk markets. See Ike Brannon & Ari Blask, REFORMING THE NATIONAL FLOOD INSURANCE PROGRAM: TOWARD PRIVATE FLOOD INSURANCE 1 (Cato Inst., Policy Analysis No. 871, 2017), <https://www.cato.org/policy-analysis/reforming-national-flood-insurance-program-toward-private-flood-insurance> [<https://perma.cc/V8ZS-HA7N>] (noting that subsidized NFIP stokes moral hazard).

insurance and receive larger payouts.<sup>194</sup> This has led commentators to describe the NFIP as the “government’s hidden housing subsidy for the rich.”<sup>195</sup> There is a small market for private flood insurance, including supplemental insurance that covers losses in excess of the NFIP’s \$250,000 cap. Upper-income, and to a lesser degree middle-income, homeowners also enjoy opportunities for wealth diversification through stocks, bonds, business ownership, and other assets. Diversification spreads risk within a household by distributing assets, and the risk of losses, across different investments.

Because the higher-income segment of the population is more vulnerable to incentive distortion regarding location choice and has insurance options for risk spreading, there is not a strong efficiency or environmental rationale for extending transition relief to this group.<sup>196</sup> Further incentivizing location in flood zones, rather than retreat, causes environmental harm to vulnerable flood zones and ecosystem services, threatens human safety, and, ultimately, increases total dispossession over time. Moreover, there is neither the political will nor the budget to fund buyouts for all of the homeowners currently at risk, much less for the number who will require funding in the future.<sup>197</sup> Relying on market forces for upper-income households has additional

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194. FEMA, NATIONAL FLOOD INSURANCE PROGRAM FACT SHEET 1 (2016), [https://www.fema.gov/sites/default/files/2020-07/fema\\_NFIP\\_National-Flood-Insurance-Program-Fact-Sheet\\_May-2016.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_NFIP_National-Flood-Insurance-Program-Fact-Sheet_May-2016.pdf) [<https://perma.cc/DS3F-LJEQ>] (stating average premium in 2016); Omri Ben-Shahar & Kyle D. Logue, *The Perverse Effect of Subsidized Weather Insurance*, 68 STAN. L. REV. 571, 579, 602 n.121 (2016) (finding a regressive effect of flood and other climate subsidies).

195. Ike Brannon & Ari Blask, *The Government’s Hidden Housing Subsidy for the Rich*, POLITICO (Aug. 8, 2017, 5:38 AM) <https://www.politico.com/agenda/story/2017/08/08/hidden-subsidy-rich-flood-insurance-000495> [<https://perma.cc/F8US-3D5F>].

196. Recall that compensation (i.e., transition relief) can distort incentives and is often unnecessary if individuals can access private insurance markets for risk spreading. *See supra* notes 164–174. Higher-income groups have the financial means to elect to move into flood zones, typically coastal areas, and can afford flood insurance. *See* Mark J. Browne & Robert E. Hoyt, *The Demand for Flood Insurance: Empirical Evidence*, 20 J. RISK & UNCERTAINTY 291, 302 (2000) (noting statistical findings that income is positively correlated with flood insurance purchases, corresponding with a low uptake of flood insurance by low-income households); V. Kerry Smith, Jared C. Carbone, Jaren C. Pope, Daniel G. Hallstrom & Michael E. Darden, *Adjusting to Natural Disasters*, 33 J. RISK & UNCERTAINTY 37, 49 (2006) (“Our analysis suggests higher income groups do not adjust to the damage caused by disasters and, if anything, tend to move to coastal locations with higher risks of flooding damage.”).

197. *See* Miyuki Hino, Christopher B. Field & Katharine J. Mach, *Managed Retreat as a Response to Natural Hazard Risk*, 7 NATURE CLIMATE CHANGE 364, 364 (2017) (describing the high cost of managed retreat and noting that by 2100, sea-level rise may displace between 72 and 187 million people).

advantages.<sup>198</sup> Real estate and insurance markets can respond to dispersed and dynamic risk information with granular pricing, offering graduated responses to flood risk.<sup>199</sup> Of course, this assumes that market participants bear the costs of their own risk-taking and cannot pass them on to investors or the government. This is currently the case for private flood insurance but not for the public NFIP.<sup>200</sup>

This Article's proposal to curtail transition relief to upper- and middle-income owners runs counter to the weight of current policy opinion. Policymakers and commentators have lauded buyouts as economically efficient.<sup>201</sup> However, their view follows from the comparison of public costs to largely private benefits. Specifically, FEMA's cost-benefit analysis compares the public costs of acquisition against the private benefit of avoiding future flood damage to the home and a modest per-foot measure of the value of ecosystem services from the land's use as open space.<sup>202</sup> However, damage avoidance is only a public benefit when the property is insured by the NFIP (which is not required by most federal buyout laws), or, circularly, because of public expenditures on disaster relief. Some commentators have argued that buyouts are efficient because it is cheaper for the government to buy out properties than to fund costly, and sometimes ineffective, adaptation measures (e.g., beach renourishment, building levees, etc.).<sup>203</sup> It is not clear whether these claims account for the volume of

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198. See Michael Pappas & Victor B. Flatt, *The Costs of Creating Environmental Markets: A Commodification Primer*, 9 U.C. IRVINE L. REV. 731, 734, 741–42 (2019) (noting the potential institutional efficacy of markets versus government regulators in responding to disaster risk).

199. See Pappas & Flatt, *Climate Changes Property*, *supra* note 11, at 370 (comparing market-based, emergent retreat policies to managed retreat policies).

200. See Brannon & Blask, *supra* note 195. For a description of how banks produced systemic risk because the banks and their key employees did not bear the cost of their faulty risk assessments, see Okamoto, *supra* note 107, at 185–89.

201. See, e.g., Kayode O. Atoba, Samuel D. Brody, Wesley E. Highfield, Christine C. Shepard & Lily N. Verdone, *Strategic Property Buyouts To Enhance Flood Resilience: A Multi-Criteria Spatial Approach for Incorporating Ecological Values into the Selection Process*, 20 ENV'T HAZARDS 229, 229–35 (2020) (explaining that buyouts are cost-effective in general and when adapted to provide more environmental value); Tate et al., *supra* note 11, at 2055–56 (finding that buyouts by the City of Cedar Rapids were cost-effective based on flood avoidance benefits); *Flood Information and Programs*, STORMWATER MGMT. COMM'N, LAKE CNTY., ILL., <https://www.lakecountyl.gov/3973/Flood-Information-and-Programs> [<https://perma.cc/M7CG-8MG4>] (noting that buyouts are “one of the most cost-effective flood reduction tools”).

202. 44 C.F.R. § 206.434(c)(5) (2022); FEMA, USING ECOSYSTEM SERVICE BENEFITS IN THE BENEFIT-COST ANALYSIS 2–3 (2021), [https://www.fema.gov/sites/default/files/documents/fema\\_hma-ecosystem-service-benefits\\_fact-sheet\\_january-2021.pdf](https://www.fema.gov/sites/default/files/documents/fema_hma-ecosystem-service-benefits_fact-sheet_january-2021.pdf) [<https://perma.cc/MN5N-DAYR>].

203. See, e.g., FREUDENBERG ET AL., *supra* note 59, at 8, 50 (favorably comparing buyouts to other adaptation measures that require ongoing public expenditures).

property buyout required to address flooding, or why we should justify buyouts based on their superior efficiency to non-cost-effective adaptation measures.

The political challenges for means testing buyouts are more concerning. Upper-income voters and the real estate interests that benefit from their coastal home purchases will oppose restricting buyout eligibility on the basis of income. One advantage of reforming buyout law now, rather than later, is that the relatively small scale of buyouts should lessen political pushback. Some floodplain owners are not yet aware of this government benefit and buyouts appear less on the political radar of real estate interests than the public flood insurance program. As buyouts grow, as seems likely given rising waters and opposition to strict development restrictions, it will become more difficult politically to restrict eligibility. The current political moment, and the growing recognition of equity as a democratic goal, may be particularly opportune for reforming buyouts to restrict subsidy to middle- and upper-income owners.

An alternative to eliminating buyouts for upper-income households, and one that may be more palatable politically, is to offer partial compensation. This will lessen, but not eliminate, incentive distortion and buy-in to flood zones. The legal structure of buyouts already allows for partial compensation via the cost share, which can be paid directly by homeowners.<sup>204</sup> The HMGP allows either the local or state government or the homeowner to pay the required cost share, although the implementing jurisdictions rarely impose cost-share requirements on owners.<sup>205</sup> Other countries have offered partial compensation in response to floods. For example, after the flood of 2013 in the Eferding Basin, the Austrian government offered to pay owners 80 percent of the home's pre-2013 market value and 80 percent of demolition costs.<sup>206</sup> In Quebec, provincial legislation offers up to \$250,000 in compensation to those who choose to relocate and a

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204. See FEMA, HOMEOWNER'S GUIDE, *supra* note 145.

205. Cf. FEMA, *Fact Sheet: Acquisition of Property After a Flood Event*, <https://www.fema.gov/news-release/20200220/fev-enfomasyon-akizisyon-pwopriyete-apre-yon-inondasyon> [<https://perma.cc/46ME-6H8R>], (last updated Mar. 18, 2021) (stating that the local or state government pays the cost share).

206. Sebastian Seebauer & Claudia Winkler, *Should I Stay or Should I Go? Factors in Household Decisions for or Against Relocation from a Flood*, 60 GLOB. ENV'T CHANGE, no. 102,018, 2020, at 1, 3 (describing a buyout in which participants had to absorb 20 percent of their home-investment and demolition costs).

lifetime maximum of \$100,000 to those who choose to rebuild instead.<sup>207</sup>

Partial compensation structured as an across-the-board maximum payment would allow low-income owners to receive complete or near-complete compensation in practice due to their lower home values, while middle- and upper-income households would garner partial compensation. For example, the government might make all flooded households eligible for buyout compensation up to \$200,000 regardless of income. This approach appeals as a compromise that provides everyone some benefit but allocates to needier households a proportionally higher amount of compensation relative to home value. However, a significant disadvantage of capped universal compensation is that expending funds on partial compensation for upper-income residents diverts money from lower-income ones, given the limited pool of funding available for buyouts. Also, a partial payment to middle- and upper-income households who have the capacity to lessen their flood risk exposure creates an incentive for buy-in, albeit a smaller incentive than full compensation.<sup>208</sup> Even if we accept these shortcomings, it is not evident that hazard mitigation grants are the ideal mechanism or FEMA the optimal institution for calibrating the level of partial payment that will reduce incentive effects while maintaining risk spreading.

*B. Risk Perception and Incentive Effects for Middle- and Upper-Income Owners*

Assumptions about incentives and risk spreading unravel, of course, if biases or cognitive failures prevent people from perceiving a flood risk. If people remain unaware of flood risk, it will not affect their behavior regardless of transition relief from the government. It seems unlikely that there is a widespread misperception that property in floodplains is without flood risk. If there was a universal perception of no or minimal flood risk, real estate prices in coastal and riverine areas would not be declining.<sup>209</sup> Moreover, in some circumstances cognitive

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207. See BRENT DOBERSTEIN, SHAIREE COTTAR, BRITTNEY WONG, MICHELLE ANAGNOSTOU & SHAWNA HAMILTON, INST. FOR CATASTROPHIC LOSS REDUCTION, GOVERNMENT-SPONSORED HOME BUYOUT PROGRAMS AND POST-FLOOD DECISIONS TO RETREAT 8 (2020), <https://www.iclr.org/wp-content/uploads/2021/04/ICLR-QRP-Report-Doberstein-et-al-FINAL-Jan-2.pdf> [<https://perma.cc/H8JA-ERD3>].

208. Kaplow, *supra* note 15, at 542, 583–84.

209. See *supra* note 115.



biases seem likely to exaggerate, rather than preclude, perception of flood risk. The “availability heuristic” causes people to overestimate probabilities based on memorable, anecdotal evidence (e.g., media coverage, personal experience) that places an event top of mind.<sup>210</sup> Major hurricanes and floods in the areas most at risk, such as Miami, Houston, and New Orleans, have left few Americans unaware of flood risk. And a growing percentage of the population has directly experienced flooding.<sup>211</sup>

It does seem likely, however, that people underestimate the magnitude of the risks of flooding and flood-related damage or that in certain circumstances risk perceptions deviate more sharply from objective flood risk (e.g., people may underestimate the risk in places subject to slow-moving sea-level rise compared to areas that have experienced storm flooding). This may counsel in favor of incremental implementation of reforms to limit, or means test, buyouts. It does not, however, provide a rationale for eschewing such reforms altogether. Law affects risk perception and, in this Author’s view, conveys information about the presence and severity of a risk, serving indirectly as a form of risk communication. Laws that increase internalization of costs not only increase financial risks but also make flood risk more salient, or top of mind. Conversely, buyout laws decrease actual financial risk and possibly flood risk perception.

Moreover, going forward, public awareness of flood risk and the accuracy of residents’ risk estimations should improve due to a recent revolution in the availability of flood risk information. The NFIP’s Risk 2.0 program now provides individualized risk estimates by address using data gathered from LiDAR, a remote sensing laser.<sup>212</sup> The

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210. Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 *SCIENCE* 1124, 1127 (1974). There is also some evidence from a study exposing participants to news clips and videos of future sea-level rise that individuals’ concern about sea-level rise and support for funding adaptation measures increases with rising risk. Treuer et al., *supra* note 3, at 112–16.

211. Cf. John P. Reser, Graham A. Bradley & Michelle C. Ellul, *Encountering Climate Change: “Seeing” Is More than “Believing”*, 5 *WIREs CLIMATE CHANGE* 521, 522–27 (2014) (finding that flooding experience provided deeper and more contextualized risk awareness of climate change and its effects). *But see* Lorraine Whitmarsh, *Are Flood Victims More Concerned About Climate Change than Other People? The Role of Direct Experience in Risk Perception and Behavioural Response*, 11 *J. RISK RSCH.* 351, 351 (2008) (finding that flooding experience did not increase perception of climate risk).

212. FEMA, *Risk Rating*, *supra* note 29; FEMA, *Federal Mapping Programs Fact Sheets* (2022), [https://hazards.fema.gov/femaportal/wps/portal/!ut/p/z0/04\\_Sj9CPykssy0xPLMnMz0vM\\_Afljo8zifQI83D38vQ38LRxNXAwCnZ1DvEL9XA0N3M30C7IdFQFYsJTI/p0/IZ7\\_LPHGHO](https://hazards.fema.gov/femaportal/wps/portal/!ut/p/z0/04_Sj9CPykssy0xPLMnMz0vM_Afljo8zifQI83D38vQ38LRxNXAwCnZ1DvEL9XA0N3M30C7IdFQFYsJTI/p0/IZ7_LPHGHO)

nonprofit First Street Foundation recently released a free online tool that reveals past flood information and estimates flood risk.<sup>213</sup> And perhaps most impactfully, the major real estate websites Redfin and Realtor.com have added flood ratings to their listings.<sup>214</sup>

### C. *Exceptions*

While the default should be against transition relief for higher-income households, there should be categories of exceptions based on efficiency and welfare concerns.<sup>215</sup> For example, it is socially costly and normatively undesirable for homeowners to be trapped in flood zones that pose a high risk to human safety because they owe more than their house is worth and cannot afford to relocate. This situation is more likely to affect lower-income owners than higher ones. However, if a higher-income homeowner in a severe flood zone faces a substantial risk of death or grave injury due to financial entrapment, both welfare considerations and morality support aid. Similarly, this Author does not endorse refusing emergency relief or housing assistance in situations of imminent peril.<sup>216</sup> In these scenarios, one option is for the government to offer more limited transition relief to middle- and upper-income owners, such as a grant or loan to fund relocation, rather than pay the full, preflood market value of the residence. Notably, climate retreat usually does not confront immediate life-or-death situations; to the contrary, buyouts typically take more than five years to complete.<sup>217</sup>

Unforeseeable, rapid-onset flood events may also justify exceptions. For example, rivers on occasion avulse, meaning that they “jump” to a new course as much as several kilometers from the original

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213. *Flood Factor*, FIRST ST. FOUND., <https://firststreet.org/flood-factor> [https://perma.cc/6NXJ-G4TV].

214. See James Kleimann, *Redfin Joins Realtor.com in Displaying Flood Data*, HOUSINGWIRE (Feb. 17, 2021, 12:40 PM), <https://www.housingwire.com/articles/redfin-joins-realtor-com-in-displaying-flood-data> [https://perma.cc/7RBQ-NC9F].

215. Shavell's work, as well as analyses by other theorists of pollution-control mechanisms and fishing permits, makes the point that, in certain circumstances, transition relief increases welfare. See Shavell, *supra* note 18, at 38–39; see also Nash, *supra* note 15, at 841–48.

216. The majority of floods do not result in high death counts. See 1 Freddy Vinet, *Flood Impacts on Loss of Human Life and Health*, in FLOODS 33, 35 (Freddy Vinet ed., 2017).

217. See WEBER & MOORE, *supra* note 11.

channel or reverse flow. These “earthquakes of rivers” appear to be increasing in frequency with climate change but are still rare and unpredictable.<sup>218</sup> An avulsion could mean that residents who were originally located in a flood-safe area now reside in the heart of a flood zone. Unlike with hurricanes and storms, there is not yet a satisfactory way to predict if a river will avulse and where it will move.<sup>219</sup> Because avulsions are unpredictable, incentive distortion is not an issue, and residents may lack opportunities for risk spreading (e.g., they may have been ineligible for federal flood insurance because they were not in a qualifying floodplain prior to the avulsion and standard home insurance policies do not cover flooding). Climate transition relief in the form of buyout or other aid would be appropriate in these cases.

Long-time owners of primary homes offer another potential category of exception based on their higher-than-average dispossession costs.<sup>220</sup> For example, a buyout program could compensate owners who bought twenty-five or more years ago, prior to public awareness of climate change. Average homeownership length is less than half this time, with relocation more frequent in some coastal areas.<sup>221</sup> As a result, protection for very long-time owners is unlikely to apply to many residents or to incentivize substantial buy-in to flood zones.

#### *D. Pricing Buyout Compensation into Public Flood Insurance*

Buyout may also be useful when the acquired property has a history of repeat insurance claims against the NFIP and buyout can save the government money.<sup>222</sup> Because the United States subsidizes

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218. Chadwick et al., *supra* note 28, at 17,588–89; Fred Pearce, *When the Levees Break*, 372 SCIENCE 676, 677 (2021).

219. Despite improvement in our ability to predict avulsions, the science is still uncertain, and human interaction with rivers and climate change stymie predictability. See Pearce, *supra* note 218, at 678.

220. High dispossession costs for long-time owners occur in part because they are more likely to be elderly. The elderly are particularly vulnerable to psychological and physical harm from relocation. See Richard V. Burkhauser, Barbara A. Butrica & Michael J. Wasylenko, *Mobility Patterns of Older Homeowners: Are Older Homeowners Trapped in Distressed Neighborhoods?*, 17 RSCH. ON AGING 363, 381 (1995).

221. See Nadia Evangelou, *How Long Do Homeowners Stay in Their Homes?*, NAR (Jan. 8, 2020), <https://www.nar.realtor/blogs/economists-outlook/how-long-do-homeowners-stay-in-their-homes> [<https://perma.cc/2N78-W5NM>].

222. See Peterson et al., *supra* note 48, at 1 (“The attraction of buyouts is that they can permanently remove vulnerable homes from flood hazard areas.”).

public flood insurance, the general public bears the burden of “repetitive loss” and “severe repetitive loss” properties, which can generate insurance payouts in excess of property value over time.<sup>223</sup> In this situation, the compensation granted is not transition relief to cushion owners from economic shock or frustrated expectations, but rather a cost-savings measure for the government as an insurer.

One solution is to offer buyouts for high-income owners only *within* the NFIP, rather than extending buyouts gratis as disaster relief. Currently, most of the federal buyout programs do not require that homeowners hold insurance to be eligible for buyout compensation. The exception is the FMA buyout program, which requires that property owners have flood insurance at the time the jurisdiction applies to FEMA for buyout funding and prioritizes the costliest properties to insure for buyouts (i.e., properties with the most severe flood damage histories).<sup>224</sup> The FMA offers a model that could be expanded to other buyout laws and programs. Anna Weber and Rob Moore of the Natural Resources Defense Council have proposed a variant of insurance-based buyouts where the NFIP would include an option, held by the government, to buy out owners when flood damage totals more than 50 percent of the home’s fair market value.<sup>225</sup>

If a buyout option is not reflected in premiums, insurance-based buyouts will still cause undesirable incentives for risky housing. Optimally, the NFIP would price the cost of buyouts into premiums for higher-income owners. As FEMA gradually phases in rate increases,<sup>226</sup> the possibility of pricing buyouts into insurance in the future, rather than subsidizing them, seems more hopeful. However, political demand for subsidy may prevent risk-based pricing of a buyout option into the NFIP. This in turn would re-create perverse incentives for risky housing choice.

In summary, buyouts, and subsidized flood insurance, are highly likely to distort higher-income owners’ incentives and prompt

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223. See Rob Moore, *Flood, Rebuild, Repeat: The Need for Flood Insurance Reforms* (Aug. 11, 2016), NAT. RES. DEF. COUNCIL, <https://www.nrdc.org/experts/rob-moore/flood-rebuild-repeat-need-flood-insurance-reforms> [<https://perma.cc/N9QT-22CP>].

224. 42 U.S.C. § 4104c.

225. WEBER & MOORE, *supra* note 11, at 4, 22 n.49. This approach might be combined with discounts for flood insurance offered in exchange for the buyout option. See Dena Adler, Michael Burger, Rob Moore & Joel Scata, *Changing the National Flood Insurance Program for a Changing Climate*, 49 ENV’T L. REP. 10,320, 10,322–23 (2019).

226. Christopher Flavelle, *Climate Threats Could Mean Big Jumps in Insurance Costs this Year*, N.Y. TIMES (Sept. 24, 2021), <https://www.nytimes.com/2021/02/22/climate/flood-insurance-fema.html> [<https://perma.cc/5XBC-XPX7>].

overinvestment in floodplains real estate. Accordingly, this Article advocates limiting access to buyout compensation for this group, at least insofar as the compensation is gratis rather than paid for via insurance. However, as discussed next, the underpinnings of climate transition relief, incentive distortion and risk spreading, point to a different conclusion for low-income residents of the floodplains.

#### V. THE HETEROGENEOUS FLOODPLAIN: TRANSITION RELIEF FOR THE POOR

The concentration of poor people on floodplains poses an enormous challenge to climate retreat policy and the project of balancing dispossession costs against incentives for safe residential location. The disparate burden of flooding on poor communities and the lack of affordable, flood-safe housing turns what would otherwise be ready solutions for climate retreat, such as the assumption of risk, capitalization of risk into real estate prices, and insurance, into environmental justice quandaries. Low-income residents often move into floodplains in search of affordable housing, not due to incentive distortions from the availability of government buyouts (or flood insurance). Not only is flood exposure high for low-income populations, its impact on finances and personal safety is more severe than for middle- and upper-income individuals, who have more resources for flood insurance, repairs, and emergency evacuation.<sup>227</sup> These differences in the operation of incentives and risk spreading for upper-income versus lower-income residents justify selectively extending transition relief to poorer residents via means testing.

##### A. *Incentives Under Conditions of Choice Constraint*

Choice is a prerequisite for incentives' influence on behavior, a neglected point in classic transition relief theory and incentive scholarship in general. Low-income households typically have highly constrained housing choices and often struggle to secure any housing at all. Exclusionary zoning regulations have severely reduced housing affordability by prohibiting dense, multifamily housing in most suburbs

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227. See Craig E. Colten, *Vulnerability and Place: Flat Land and Uneven Risk in New Orleans*, 108 AM. ANTHROPOLOGIST 731, 733 (2006); Daniel A. Farber, *Disaster Law and Inequality*, 25 LAW & INEQ. 297, 302–04 (2007) [hereinafter Farber, *Disaster Law and Inequality*] (describing the vulnerability of poor and Black residents during Hurricane Katrina and other disasters).

and many urban areas—not despite law, but as a matter of law.<sup>228</sup> For example, a study of the San Francisco Bay area found that growth controls and moratoria in certain areas of the city increased housing prices 17–38 percent compared to areas without restrictive regulations.<sup>229</sup> Compounding undersupply in the private housing market, there is also a major shortage of subsidized housing.<sup>230</sup> Choices for low-income renters are so limited that the federal rental voucher program, which gives renters payment vouchers for private apartment rentals, is now experimenting with employing “housing navigators” to help participants secure apartments.<sup>231</sup>

These constraints on housing choice greatly reduce the incentive distortion and overinvestment produced by government compensation.<sup>232</sup> The primary force motivating low-income owners and renters to reside in the floodplains is neither the safety net of government compensation from buyouts nor subsidies from public flood insurance. Instead, it is the fact that floodplains are more affordable, in part *because* of their flood risk.<sup>233</sup> Researchers observe

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228. See Christopher Serkin & Leslie Wellington, *Putting Exclusionary Zoning in Its Place: Affordable Housing and Geographical Scale*, 40 FORDHAM URB. L. REV. 1667, 1667–68, 1674–77 (2016). One challenge for climate adaptation will be to selectively increase residential density (inclusionary zoning) in climate-safe zones. Increasing density in flood zones multiplies exposure to flood risk and presents a troubling tradeoff. This Author thanks Heather Payne for her comments on this point.

229. Lawrence Katz & Kenneth T. Rosen, *The Interjurisdictional Effects of Growth Controls on Housing Prices*, 30 J.L. & ECON. 149, 158 (1987). A more recent study in Manhattan found that constraints on new housing construction doubled the cost of condominiums. Edward L. Glaeser & Joseph Gyourko, *Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices*, 48 J.L. & ECON. 331, 367 (2005).

230. Nat'l Low Income Hous. Coal., *The Long Wait for a Home*, 6 HOUS. SPOTLIGHT 1, 5 (2016), [https://nlihc.org/sites/default/files/HousingSpotlight\\_6-1.pdf](https://nlihc.org/sites/default/files/HousingSpotlight_6-1.pdf) [<https://perma.cc/ZFK3-Q96A>].

231. Peter Bergman, Raj Chetty, Stefanie DeLuca, Nathaniel Hendren, Lawrence F. Katz & Christopher Palmer, *Creating Moves to Opportunity: Experimental Evidence on Barriers to Neighborhood Choice* 13, 19–29 (Nat'l Bureau of Econ. Rsch., Working Paper No. 26164, 2020), <https://www.nber.org/papers/w26164> [<https://perma.cc/XZ2L-QK3X>].

232. Cf. Treuer et al., *supra* note 3, at 114–15 (explaining that, in a study that exposed 348 South Florida residents to computerized simulations of climate change over time, lower-income participants expressed stronger intentions to move, as did upper-income participants, compared to middle-income participants).

233. The role of floodplains in housing the poor is evident in the close similarity between floodplain maps and maps of historic redlining (the government policy of refusing to insure mortgages in neighborhoods populated by poor residents of color). See Lily Katz, *A Racist Past, A Flooded Future: Formerly Redlined Areas Have \$107 Billion Worth of Homes Facing Flood*

that low-income households live in higher risk areas because flood risk discounts housing prices and increases affordability.<sup>234</sup> Climate gentrification is further increasing the concentration of low-income people in the most severe flood risk zones as individuals with financial means seek higher ground, including in formerly low-income communities of color.<sup>235</sup>

### *B. Concentrated Losses and Risk Spreading*

Compared to their more affluent counterparts in the floodplains, low-income residents have limited access to risk spreading to mitigate climate losses. First, there is no insurance that covers the value of a renter's lost lease (i.e., the difference between rent in a flooded rental and the market rent for a comparable rental) or permanent relocation costs. Renters can only purchase insurance policies for property damage, either in the private market or through the NFIP. It seems unlikely that more comprehensive tenants' insurance will arise, as many tenants cannot afford to insure their personal property, much less their lease interest. As a result, tenants lack risk-spreading options for the costs associated with relocation.

Second, low-income owners are less likely to carry flood insurance due to difficulty affording it.<sup>236</sup> The overall rate of uptake for flood insurance is low, with more than two-thirds of eligible owners lacking insurance.<sup>237</sup> Low-income owners are less likely to maintain flood insurance than higher-income owners.<sup>238</sup> This occurs despite the fact that flood insurance is compulsory to acquire a mortgage on property

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*Risk—25% More Than Non-Redlined Areas*, REDFIN NEWS (Mar. 14, 2021), <https://www.redfin.com/news/redlining-flood-risk> [<https://perma.cc/WY72-CC4H>].

234. See Sarmiento & Miller, *supra* note 14, at 13 (“[L]ow income households live in higher [flood] risk areas than middle income households in order to find affordable housing.”). Of course, this is the case on average, not for every household or for Tribal communities and certain intentional communities of color.

235. See Keenan et al., *supra* note 189, at 2–4.

236. Solving the underinsurance problem in low-income communities may require means testing or vouchers for public flood insurance, proposals currently under consideration by the executive branch. Thomas Frank, *Biden Budget Includes Plan To Help Poor Buy Flood Insurance*, SCI. AM. (June 1, 2021), <https://www.scientificamerican.com/article/biden-budget-includes-plan-to-help-poor-buy-flood-insurance> [<https://perma.cc/JFN2-GMWH>].

237. Carolyn Kousky & Brett Lingle, *The Three Maps that Explain Residential Flood Insurance Purchases*, WHARTON RISK MGMT. & DECISIONS PROCESSES CTR. (Sept. 17, 2018), <https://riskcenter.wharton.upenn.edu/lab-notes/the-3-maps-that-explain-residential-flood-insurance-purchases> [<https://perma.cc/7DSK-QM7G>].

238. See Browne & Hoyt, *supra* note 196.

in a FEMA-designated Special Flood Hazard Area (“SFHA”) and the federal government heavily subsidizes public flood insurance.<sup>239</sup> As William Donner and Havidán Rodríguez observe in their analysis of population composition and disaster inequality, “Disaster-resistant housing and affordable insurance are often beyond the financial grasp of the poorest groups within society, placing them at greater risk.”<sup>240</sup> Flood insurance has become so unaffordable for low-income owners that there is debate at present about whether to means test NFIP premiums to rectify disparate access to flood insurance.<sup>241</sup>

One could argue that the unaffordability of insurance means that insurance is working as intended to price residents out of high-risk areas. This is true to the extent that insurance unaffordability does accomplish some residential movement to climate-safer locations, albeit far less for poor households for the reasons previously discussed. However, relying solely on affordability and market forces conflates ability to pay with welfare. Low-income residents may be unable to afford insurance but have significant financial investment in a residence or a strong commitment to remain in their community. This argument also assumes that once priced out of insurance, low-income households can afford climate-safer housing options outside of flood zones.

Notably, even if a lower-income owner can afford public flood insurance, it is designed to address the risk of property damage, not relocation. Most flood-damage payouts fall well short of a “total loss” and thus fund repairs but not relocation.<sup>242</sup> For those who can afford private insurance, “value policies” exist (though are not yet common) that guarantee a prespecified dollar payout, even if that amount exceeds the actual damage or the fair market value of the property. Private “value policies” enable owners who can afford these policies to use insurance payouts to relocate.<sup>243</sup>

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239. See 42 U.S.C. § 4012a(a)–(b).

240. William Donner & Havidán Rodríguez, *Population Composition, Migration and Inequality: The Influence of Demographic Changes on Disaster Risk and Vulnerability*, 87 SOC. FACTORS 1089, 1091 (2008).

241. Subsidizing insurance is likely to create a degree of incentive distortion among low-income owners to stay in climate risk zones, although as discussed in this Part, affordability is the main driver of location in flood zones for this group.

242. Telephone Interview with NFIP (June 2021) (notes on file with author).

243. It is not clear that private value insurance will remain available to redress flooding. As flooding costs mount, private insurers may pull out of the market. Rising storm- and fire-damage costs are already causing insurers to decline coverage or become insolvent in some markets. See



Not only do low-income households have less access to insurance and other risk-spreading mechanisms, they experience higher marginal harms from home loss because they have less wealth to begin with (i.e., the declining marginal utility of money). In addition, low-income owners' assets are highly concentrated in their home equity.<sup>244</sup> This amplifies losses and leaves them at higher risk of mortgage entrapment, meaning their outstanding debt prevents them from relocating despite dangerous declines in habitability and safety. Tenants may face even steeper marginal costs because affordable leases are painfully scarce, more so than lower-priced real estate inventory for purchase.<sup>245</sup> The loss of housing assets also imposes secondary harms because housing is intertwined with educational opportunities, job opportunities, and even health. Downward mobility in place-based opportunity has a particularly deleterious effect on children, as demonstrated by Raj Chetty's groundbreaking work on the effect of rental vouchers on child outcomes.<sup>246</sup>

The economic toll of climate dispossession may span generations for low-income homeowners, particularly those of color. Home wealth is an important source of intergenerational wealth building for Black families and a major contributor to the black-white wealth gap.<sup>247</sup> In addition, there may be emotional losses for owners regardless of income; however, these effects appear quite variable, with empirical

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Thomas Frank, 'This Is Not a Survivable Market.' *Insurance Crisis Hits Fla.*, CLIMATEWIRE (June 22, 2022, 6:54 AM), <https://www.eenews.net/articles/this-is-not-a-survivable-market-insurance-crisis-hits-fla> [<https://perma.cc/K37J-5D84>].

244. NICOLAS PAUL RETSINA & ERIC S. BELSKY, *LOW-INCOME HOMEOWNERSHIP: EXAMINING THE UNEXAMINED GOAL 201* (2002) (explaining that for owners with incomes below \$20,000, home equity is 72 percent of household wealth, and for owners with incomes between \$20,000 and \$49,999, home equity is 55 percent of household wealth).

245. JOINT CTR. FOR HOUS. STUD. OF HARV. UNIV., *AMERICA'S RENTAL HOUSING 1*, 4-5 (2020), [https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard\\_JCHS\\_Americas\\_Rental\\_Housing\\_2020.pdf](https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_Americas_Rental_Housing_2020.pdf) [<https://perma.cc/HN9U-3CT7>].

246. See Raj Chetty, Nathaniel Hendren & Lawrence F. Katz, *The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment*, 106 AM. ECON. REV. 855, 888 (2016).

247. Cf. Alexandra Killewald & Brielle Bryan, *Does Your Home Make You Wealthy?*, 2 RUSSELL SAGE FOUND. J. SOC. SCI. 110, 120 (2016) (showing that annual wealth benefits from home ownership are only 50 percent as large for Blacks and 62 percent as large for Latinos as for whites).

evidence showing some residents instead experience place-linked trauma after a flood and prefer to move.<sup>248</sup>

### C. *The Case for Transition Relief for Low-Income Residents*

High- and low-income residents differ starkly in their opportunities for risk spreading and the effect of buyout compensation on their incentives. Higher-income homeowners enjoy greater housing choice, a prerequisite to distortion of location incentives, as well as access to risk-spreading markets.<sup>249</sup> For this group, a presumption favoring market forces or extending transition relief only in narrow circumstances would minimize incentive effects and reduce the increasing flow of higher-income buyers into flood zones. Low-income owners and renters present a different picture due to constraints on housing choice and the likelihood of concentrated losses. The case for transition relief is more robust for this group, as is the need to craft transition relief that promotes climate-safer relocation.

Leaving climate retreat to market forces allocates flood risk to low-income households with constrained housing choices and much to lose. Localities have permitted floodplain housing development, despite growing awareness of its environmental and safety risks.<sup>250</sup> As flooding worsens, falling real estate prices attract more low-income residents to the discounted floodplains and entrap existing low-income households.<sup>251</sup> This is a climate version of residential real estate

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248. See Julia Woodhall-Melnik & Eric P. Weissman, *Living with Disaster: Exploring Complex Decisions to Stay in or Leave Flood Prone Zones*, HOUS. STUD., June 7, 2021, at 1, 17 (showing that association of homes with trauma promoted desire to move); see also Seebauer & Winkler, *supra* note 206, at 9–10 (finding varying reactions post-flood, with some residents fearful to remain in their homes).

249. See David K. Ihrke & Carol S. Faber, *Geographical Mobility: 2005 to 2010*, U.S. CENSUS BUREAU, at tbl.5, <https://www.census.gov/library/publications/2012/demo/p20-567.html> [<https://perma.cc/35VF-D8P5>].

250. See *supra* notes 97–99.

251. See de Koning & Filatova, *supra* note 42, at 6–7 (explaining how market forces entrap low-income households in floodplains to their further financial detriment); Christopher Coes, Tracy Hadden Loh & Tola Myczkowska, *The Great Real Estate Reset*, BROOKINGS INST. (Dec. 16, 2020), <https://www.brookings.edu/essay/distorted-and-destabilized-housing-markets-are-pushing-households-into-climate-risky-low-opportunity-communities> [<https://perma.cc/GVN8-SWGL>] (“Our current system prices some environmental risk into housing costs, so low-income residents naturally find their way into cheaper, riskier housing.”); Pappas & Flatt, *Climate Changes Property*, *supra* note 11, at 379 (“For instance, owners of vulnerable properties may not be financially able to leave unless they can sell their properties, so they continue to occupy risky properties until they can recoup some investment.”).

“filtering,” where new market-rate housing development for upper-income households makes available the older (in this version, more waterlogged) housing for lower-income households.<sup>252</sup> Because floods capitalize into real estate prices, refusing to buy out low-income residents will likely increase their residential density in floodplains and leave them without funds for safe relocation.

While this Article has focused thus far on efficiency justifications for transition relief for low-income residents, distributional and reparational rationales also support targeting climate transition relief to low-income owners and tenants. Redistributive justice theory would consider constraints on choice, such as exclusionary zoning and the high costs of dispossession to low-income residents, as unequal or inequitable distributions that society should correct.<sup>253</sup> Climate reparations theories, while varying in aims and methodology, would largely support voluntary relocation assistance and housing compensation for the climate vulnerable, though not as a complete repair of the harm.<sup>254</sup>

#### *D. Social Justice Pitfalls of Means Testing Buyouts*

Targeting buyout funding to low-income residents reduces regressivity and enables choice; however, it also gives rise to significant social justice pitfalls. In some cases, low-income communities and communities of color have opposed buyouts on equity grounds or due to distrust rooted in past dispossessions by the government, such as

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252. See RICHARD U. RATCLIFF, *URBAN LAND ECONOMICS* 321–23 (1949) (explaining the classic formulation of filtering theory). Filtering as a method to improve housing supply and quality is controversial, and this Article does not seek to enter this debate. See, e.g., William C. Baer & Christopher B. Williamson, *The Filtering of Households and Housing Units*, 3 *J. PLAN. LITERATURE* 127, 131–32 (1988) (reviewing criticisms of filtering theory). Rather, the point for climate retreat is that as upper-income residents flee floodplains, there is a high risk that lower-income households attracted by declining prices will move in.

253. For an overview of the various subtheories of distributive justice, see Serena Olsaretti, *Introduction: The Idea of Distributive Justice*, in *THE OXFORD HANDBOOK OF DISTRIBUTIVE JUSTICE* 1, 1–13 (2018). *But see* Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 96 *GEO. L.J.* 1565, 1583–1602 (2008) (concluding that, in the context of addressing climate change, distributive and corrective justice do not require the United States to reduce greenhouse gas emissions in excess of its national self-interest and in greater proportion than poor nations).

254. See Maxine Burkett, *Climate Reparations*, 10 *MELBOURNE J. INT’L L.* 509, 524–34 (2009); Rebecca Buxton, *Reparative Justice for Climate Refugees*, 94 *PHILOSOPHY* 193, 200–18 (2019).

urban renewal.<sup>255</sup> For example, a post-Katrina proposal to buy out New Orleans homes in low-income, predominantly Black neighborhoods elicited protest and severe political backlash.<sup>256</sup> In theory, buyout could be an opportunity to revitalize low-income communities by adding open space and creating safer housing; however, past appropriations of low-income homes and neighborhoods by the government have rarely produced these benefits.<sup>257</sup>

The application of cost-benefit analysis to buyouts raises the concern that low-income households, who generally rent or own lower-value homes, will be the most cost-effective targets for climate retreat. Specifically, high-income communities may disproportionately benefit from the construction of levees, elevated infrastructure, or other adaptations that allow them to remain in place, while low-income communities will be subject to buyouts. This could also result in higher-income households receiving larger amounts of financial subsidy via adaptation grants than lower-income ones do from buyouts. These potential disparities are serious concerns. However, they should be addressed by environmental justice regulation, civil rights law, and advocacy, not by extending buyout subsidies to upper-income homeowners. Additionally, scholars have noted that low-income residents may be forced out to create buffer zones for the benefit of the remaining, higher-income owners.<sup>258</sup> Notably, the statutory requirement that owners must voluntarily agree to buyouts counteracts this risk, as does the prevalence of residential segregation by income.

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255. For example, in the historic Black neighborhood of Kashmere Gardens in Houston, buyouts were controversial, and residents at one point rejected a buyout. See Kevin A. Lynn, *Who Defines 'Whole': An Urban Political Ecology of Flood Control and Community Relocation in Houston, Texas*, 24 J. POL. ECOL. 951, 957 (2017).

256. See Juliette Landphair, *"The Forgotten People of New Orleans": Community, Vulnerability, and the Lower Ninth Ward*, 94 J. AM. HIST. 837, 844 (2007); Siders, *supra* note 39, at 250 (describing the backlash to the buyout plan as "immediate and severe"). Notably, residents of high-income communities, including Del Mar and other coastal towns in California, have vigorously opposed managed retreat of private homes and advocated for publicly funded armoring and sandbagging instead, largely on the basis of loss of their oceanside residences and their ability to pass down those homes to their children. See Bragg et al., *supra* note 154.

257. For example, governments could use buyouts to invest in low-income communities, rather than dispossess them, by buying flood-prone parcels and creating parks and green space in conjunction with flood-safe affordable housing. See Caroline M. Kraan, Miyuki Hino, Jennifer Niemann, A.R. Siders & Katharine J. Mach, *Promoting Equity in Retreat Through Voluntary Property Buyout Programs*, 11 J. ENV'T STUD. & SCI. 481, 487 (2021).

258. Cf. Mach & Siders, *supra* note 9, at 1297 ("To identify a place where retreat will or 'should' occur purely on the basis of exposure to hazards or economic efficiency is to erase the lived experiences and factors central to relocation.").

Resident opposition may also derive from the inability of buyouts to compensate for noneconomic values, such as the value of neighborhood ties or other personal attachments to place.<sup>259</sup> Strong place and community attachments, while not ubiquitous, affect some residents.<sup>260</sup> For low-income individuals, who on average occupy homes of lesser financial value, personal and community attachments likely comprise a relatively higher proportion of the total subjective value of the residence to the resident compared to higher-income individuals. There may be absolute differences in residential attachment as well. Low-income residents tend to rely more heavily on neighbors and nearby family for help, such as childcare, favors, and short-term loans, than their higher-income counterparts.<sup>261</sup> These support networks require time and familiarity and cannot be readily duplicated when residents disperse to new locations. The noneconomic value of home loss supports increased experimentation with whole community relocation, more limited co-relocation of community members by offering subsidized housing, or linking modest amounts of incentive compensation to longevity of residence (rather than the current practice of paying bonuses to residents for relocating in the same county).<sup>262</sup>

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259. For example, residents of the Ninth Ward in New Orleans have exceptionally robust community attachments and a long history of sheltering Black residents. See Landphair, *supra* note 256, at 839–42. Although this Article does not directly address historic, intentional, and Tribal communities, these communities, as well as individuals in other communities who have atypically strong community attachments, raise hard questions for climate retreat.

260. Some climate retreat research has not found strong evidence of place attachment. For example, a survey of working-class and middle-class residents in communities affected by Hurricane Sandy found that loss of friends, neighbors, and families from the community was the least important concern of residents in their relocation decision-making. Bukvic & Owen, *supra* note 21, at 110, 113.

261. See Miranda J. Lubbers, Mario Luis Small & Hugo Valenzuela García, *Do Networks Help People To Manage Poverty? Perspectives from the Field*, 689 ANNALS AM. ACAD. POL. & SOC. SCI. 7, 10–13, 15–17 (2020). Sociologists have noted that while low-income people rely on family, friends, and neighborhoods, “network poverty” can occur when the members of one’s network lack financial resources, connections to opportunities, or certain types of information. See *id.* at 12–15.

262. For an interesting proposal for whole-community relocation, see Jessica Owley, *Climate-Induced Human Displacement and Conservation Lands*, 58 HOUS. L. REV. 665, 670–85 (2021). With respect to government compensation, Thomas Merrill has suggested the government pay a 1 percent bonus above fair market value for each year of residence in a home when the government takes property under eminent domain. *The Kelo Decision: Investigating Takings of Homes and Other Private Property: Hearing Before the S. Jud. Comm.*, 109th Cong. 122 (2005) (statement of Thomas W. Merrill, Professor, Columbia Law School). In low-income communities, particularly among renters, residential tenure is typically shorter, so residence in a neighborhood

All of these concerns underscore the role of environmental justice in climate retreat and the importance of ensuring that buyouts remain voluntary.<sup>263</sup> However, the goal of equity does not support an income-neutral approach to buyouts or legal rules prohibiting buyouts. Voluntary buyouts provide low-income owners an option they might otherwise lack.<sup>264</sup> Communities, and individuals within communities, differ in their preferences for buyout versus rebuilding in place and should have a meaningful choice. In addition, as water levels rise, compensation for climate retreat is likely to become increasingly valuable and sought after by homeowners. Societal views of what constitutes an equitable and desirable solution will shift with escalating flood frequency and severity. Even now, buyout applications outnumber funding dollars, suggesting significant demand for government funds.<sup>265</sup> Without means testing, it seems likely that the opposite social justice concern will arise that upper- and middle-

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or census tract may be the better measure. With respect to eminent domain in response to residential flooding, Katie Sinclair has suggested enhanced compensation and a sliding scale of compensation based on income. 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, 303–05 (2019).

263. Cf. A.R. Siders, Miyuki Hino & Katharine J. Mach, *The Case for Strategic and Managed Climate Retreat: Why, Where, When, and How Should Communities Relocate?*, 365 *SCIENCE* 761, 761 (2019) (noting that retreat has “focused overwhelmingly on physical removal of people and buildings, with limited discussion of the social, cultural, psychological, or long-term economic consequences”). In addition to the unique concerns of low-income residents, forced retreat is “heavy-handed and politically contentious” in most communities and requires the government to pay just compensation under the Fifth Amendment Takings Clause. Mark P. Nevitt, *Climate Adaptation Strategies: How Do We Manage Managed Retreat* 5 (Univ. of Penn. Working Paper, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3681454](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3681454) [<https://perma.cc/YD2B-3KQQ>]. Questions remain about what constitutes voluntary acceptance of a buyout. When financial need forces buyout because residents cannot afford flood repairs or reconstruction, there is debate about whether relocation is truly voluntary. See Mach & Siders, *supra* note 9, at 1297 (“Voluntariness of retreat is often assumed to maximize benefits and minimize losses, but empirical work is needed to explore exactly what voluntariness entails.”).

264. There appears to be psychological value to the option of buyout. A study of buyouts following Hurricane Sandy found that individuals who relocated were less likely to report worsened stress than those who lived in neighborhoods where there was not an organized buyout and rebuild in place. See Liz Koslov, Alexis Merdjanoff, Elana Sulakshana & Eric Klinenberg, *When Rebuilding No Longer Means Recovery: The Stress of Staying Put After Hurricane Sandy*, 165 *CLIMATIC CHANGE* 59, 59 (2021).

265. See *supra* notes 124–125 (describing the infeasibility of scaling up buyout funding to cover all affected residential property).

income (and in practice whiter) households will disproportionately access and benefit from buyouts.<sup>266</sup>

*E. Lessons from the Low-Income Floodplain for Legal Theory*

Thus far, this Article has examined how classic transition relief theory can inform federal buyouts in the floodplains. In a final note, this Section briefly considers how floodplains can inform transition relief theory. Classic transition relief theory usefully exposit the incentive problems compensation causes. However, the assumptions transition relief theory proceeds from, such as unconstrained incentives, functioning insurance markets, and sufficient wealth to purchase insurance, do not always apply.<sup>267</sup> As a result, classic transition relief theory helpfully illuminates the efficiency pitfalls of compensation for property owners with means but founders in its application to low-income floodplains.

The low-income floodplain offers a cautionary tale about generalizing across different populations and reveals how factors such as income inequality, discrimination, and law affect the application of models in practice. Kwame Anthony Appiah has described how humans construct models that serve as useful platforms for cognition, not because they accurately depict all aspects of realities but because they create an edifice for comparison and means of understanding our actual beliefs.<sup>268</sup> In this way, idealized models improve our ability to see and incorporate the imperfections of reality.<sup>269</sup> The classic model of transition relief exposit by Kaplow and others serves a similar function and illuminates the complexities of climate transition relief on heterogeneous floodplains.

In the low-income floodplains, severely choice-constrained housing markets mute the incentive effect from buyout compensation

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266. In addition to income, there are racial dimensions to buyout access that require further research. A recent study by James R. Elliott, Phylcia Lee Brown, and Kevin Loughran found that whiter neighborhoods within whiter central counties had greater access to federal buyouts, but homeowners in neighborhoods of color located in these counties were most likely to accept buyouts when offered. *See* Elliott et al., *supra* note 14, at 12.

267. *Cf.* Kaplow, *supra* note 15, at 597 (noting an inverse relationship between risk aversion and income but concluding that special exceptions should not be made for low-income people because “patterns of ownership might be distorted if compensation or other mitigation were made a function of some observable characteristic of owners of the affected assets”).

268. KWAME ANTHONY APPIAH, *AS IF: IDEALIZATION AND IDEALS* 101, 126–27 (2017).

269. *See id.* at 126–30.

and enhance the loss from uncompensated flooding, both in terms of primary risk-bearing and secondary welfare effects. Moreover, in some cases, such as housing, the limits on choice flow substantially from prior government action (e.g., anticompetitive zoning laws, exclusion of persons of color from communities via racially restrictive covenants, and historic redlining that denied FHA loans in communities of color).<sup>270</sup> For low-income residents of floodplains, the solution is not to remove the option of transition relief, but to adapt it. In addition, because classic transition relief theory addresses only the question of compensation for investors, it omits nonowners (i.e., tenants) and the need to reallocate initial entitlements in some circumstances, points that Part VI.B discusses.

## VI. IMPLEMENTING BUYOUTS AS CLIMATE TRANSITION RELIEF

This Part explores how to translate a reconceptualized view of buyouts as climate transition relief into law. Compared to current federal buyout laws, climate transition relief both narrows eligibility and widens the type of available relief. This Part first discusses how to limit buyouts based on income and highlights possibilities for state or local action in the event of continued federal government inaction on means testing. The Article offers initial thoughts, not fully delineated legislative proposals, in part because state or local reforms could productively differ based on regional flood patterns, populations, and culture. Second, Part VI.B advocates extending climate transition relief to tenants and considers ways to implement this change. Last, Part VI.C proposes reforms to improve climate retreat from buyouts and ensure that residents in fact relocate to flood- and climate-safe housing.

### A. *Restructuring Buyout Eligibility*

An important, and controversial, recommendation of this Article is to curtail residential buyouts as a climate retreat strategy. Specifically, as discussed in Part IV, climate retreat policy should eschew transition relief (i.e., buyout) as the default for upper- and middle-income homeowners, who are able to avoid flood losses or to pay for buyouts as optional coverage within public flood insurance. Instead, the federal government should allocate buyout funds to lower-income residents of floodplains, who experience less incentive

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270. See *supra* notes 228–230 and accompanying text.



distortion and more concentrated harms from home loss. Notably, limiting buyouts already exists within the Stafford Act, although not on the basis of income. Because FEMA distributes funding in response to local application and lacks funding to make buyouts universally available, only a fraction of homes currently benefit. In addition, a federal regulation caps federal disaster funding to a percentage of the estimated grant relief needed by the state.<sup>271</sup>

There are multiple ways to target buyout transition relief to low-income floodplains residents. Most directly, buyout laws could means test eligibility based on household income, with the federal agencies determining income cutoffs or tiers for eligibility. Another alternative is to base means testing on pre-flood home value. However, this approach could encourage investors to strategically purchase low-value homes in flood zones and would overfund individuals with low-value homes but significant wealth. Another approach is to adopt universal compensation for buyouts with stringent caps on the maximum amount paid out, as the NFIP does for building damage payouts. Lower-income residents in practice would receive full or near-full compensation for their modest-value homes. Higher-income residents would receive the same sum of money, but it would amount to only partial compensation of their pricier homes. Capped compensation is cheaper to administer than means testing and has broader political appeal, but it would allocate money to higher-income citizens at the expense of low-income ones.

There are also indirect forms of means testing, whose primary advantage may be their political palatability. One alternative, adopted by the city of Houston, is to fund buyouts only for riverine properties.<sup>272</sup> Proximity to the ocean versus wetlands or river floodplains is a rough proxy for owner wealth, with a higher concentration of affluent residents in coastal areas. However, this approach can be over- and underinclusive, excluding some low-income communities in coastal areas and funding middle- or higher-value properties in riverine areas.

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271. 44 C.F.R. § 206.432(b)(1) (2022). The federal government may fund 15 percent of the first \$2 billion or less in estimated grant relief and then a smaller percentage for amounts exceeding \$2 billion. *Id.* A slightly higher funding percentage is available to states that have developed comprehensive mitigation plans and demonstrated sound use of past mitigation funding. 44 C.F.R. §§ 206.432(b)(2), 201.5.

272. See *Active Buyout Projects*, HARRIS CNTY. FLOOD DIST. (Oct. 2021), <https://www.hcfc.org/Portals/62/Home-Buyout-Program/HCFCD%20Active%20Buyout%20Projects.pdf> [<https://perma.cc/98PH-VSTC>].

In tandem with restricting eligibility based on income, the HMGP and other FEMA buyout programs could substantially reduce, or eliminate, the 25 percent cost-share requirement when the locality buys out low-income owners. This legislative revision would avoid the circuitous practice of the state or locality securing federal CDBG and CDBG-DR funds to pay the 25 percent cost share for acquisitions. Institutionally, we might shift buyout responsibility to the HUD CDBG and CDBG-DR programs, as federal law already requires that these funds mostly benefit low- or moderate-income individuals. However, FEMA's superior expertise at hazard mitigation and enforcement of local NFIP regulations casts doubt on such a move.<sup>273</sup>

With respect to compensation, the amount that low-income owners receive could reflect the value of a comparable, flood-safe residence or the preflood market value of their acquired residence (Part VI.B discusses tenant compensation). It is possible that the government will be able to afford only partial compensation as flooding intensifies and an increasing number of low-income households move into the floodplains.<sup>274</sup> Providing partial climate transition relief for a greater number of low-income residents may be distributionally preferable to full compensation of a small number. Uncertainty about the long-term availability of funds for buyouts at full, preflood fair market value underscores an additional benefit of reframing buyouts—and resident expectations—from dispossession compensation to climate transition relief.

A potential cost of means testing buyouts is that it may cause less environmentally beneficial selection of buyout properties.<sup>275</sup> Clustering buyouts to create contiguous, well-situated blocks of open space can buffer against flooding, provide ecosystem services such as water filtration or carbon absorption, and reduce local maintenance costs for open space. Because it is difficult to convince homeowners to accept buyouts, “checkerboard” patterns of home buyouts are common under the current system of universal eligibility.<sup>276</sup> As a result, limiting buyouts based on income may not substantially decrease

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273. We could also reform buyouts to allow residents to apply directly to the federal or state government for transition relief, rather than making funding contingent on application by their local government, a point I explore in future work. Stephanie M. Stern, *Climate Adaptation: Mechanisms for Local Self-Determination* 1–3 (Aug. 4, 2022) (unpublished manuscript) (on file with the *Duke Law Journal*).

274. See *supra* notes 251–252 and accompanying text.

275. Atoba et al., *supra* note 201, at 229.

276. *Id.*

environmental benefits from the current baseline. Also, because housing developments are often economically homogeneous, and low-income people tend to live in the riskiest locations for riverine flooding, means-tested buyouts may provide sufficient opportunity to create contiguous open spaces. If that does not occur, it is possible to use eminent domain (i.e., government expropriation of flooded land with just compensation paid to owners) instead of voluntary buyouts to design ecologically based floodplains in the path of severe flooding, as the Dutch currently do in their “Room for the River” flood control program.<sup>277</sup>

To implement an income-differentiated approach, the federal government could amend the HMGP, or, alternatively, states and localities could adopt income requirements within the scope of their implementation powers. Because states and localities typically implement buyouts, they can impose their own limits within the cooperative federalism structure of buyout statutes, so long as they do not contravene federal statutes or regulations (e.g., a locality could not adopt an ordinance allowing redevelopment of land acquired with HMGP funds). States and localities could enact rules limiting buyouts to low-income residents or requiring a minimum percentage of low-income homeowners in each buyout. Because the major federal buyout laws require a cost share, this could easily be accomplished without raising preemption concerns by legislating that any buyout using state or local funds must use means testing or benefit a specified percentage of lower-income individuals.

There is much to be said about the comparative competence of federal, state, and local governments to legislate and implement climate transition relief. This Section has focused on the point that different levels of government can differentiate buyouts by income and leaves to future work the complex question of which level of government should bear primary responsibility for climate transition relief.

#### *B. Beyond Compensation for Owned Assets: Tenants and Subsidies*

Classic transition relief theory, as expounded by Graetz, Kaplow, and other scholars, addresses the problem of legal changes from the standpoint of investors.<sup>278</sup> Thus, transition relief theory takes baseline

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277. See *supra* note 35.

278. See *supra* note 15.

entitlements as it finds them, prior to the change in question, and considers whether relief is desirable. By focusing on compensation and ownership, the possibility of reallocating initial entitlements falls off. This is not a condemnation of classic transition relief theory but rather an observation that it addresses the specific question of relief for owner-investors. This Section considers circumstances where we might expand climate transition relief beyond asset compensation, such as to relocate tenants and subsidize residential adaptation.

Because climate change, and the need to retreat from flooding, affect tenants as well as owners, either buyout compensation or similar relief should be available to tenants. One-third of all housing units on floodplains are renter-occupied.<sup>279</sup> Because renters have less wealth than homeowners, they have fewer resources to evacuate in emergencies or to replace lost possessions.<sup>280</sup> Yet, renter households receive far less government aid, in part because they are ineligible for the generous buyout compensation afforded to some of their homeownership counterparts.<sup>281</sup> This disparity has racial, as well as socioeconomic, dimensions. Redlining, legally enforced segregation, and housing market discrimination have restricted homeownership opportunities for people of color, who now comprise a disproportionate share of renters.<sup>282</sup>

A major deficit of buyout laws, such as the HMGP, is that they do not compensate for leasehold interests. Instead, the Uniform Relocation Act (“URA”), which provides compensation and assistance for residents displaced by federal actions, applies to tenants.<sup>283</sup> The URA pays tenants’ relocation costs plus the difference between their current rental and market rental rates for a comparable dwelling, subject to a cap of \$7200 over a forty-two month period of

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279. NYU FURMAN CTR., HOUSING, *supra* note 41, at 4.

280. See Colten, *supra* note 227 (describing how many impoverished residents of New Orleans lacked private automobiles to escape during Hurricane Katrina); see also Farber, *Disaster Law and Inequality*, *supra* note 227, at 305 (noting that the poor struggle to recover postdisaster in part because they are less likely to be homeowners and so lack home insurance and special government benefits for homeowners).

281. See Dundon & Camp, *supra* note 137, at 422–24 (discussing a study that found a smaller percentage of financial assistance flows to renters than to owners); JOINT CTR. FOR HOUS. STUD. AT HARV. UNIV., *supra* note 139 (describing 2019 HUD analysis of Community Development Block Grant-Disaster Recovery finding that from 2006 to 2015 only \$3.05 billion went to rental relief compared to \$13.6 billion for homeowner compensation).

282. Dundon & Camp, *supra* note 137, at 426.

283. 42 U.S.C. §§ 4601–4638.

assistance.<sup>284</sup> This amount pales beside the hundreds of thousands of dollars that owners receive in buyouts. Moreover, it systematically undercompensates tenants for their leasehold interest. In a buyout, the tenant has lost a right they bargained for in the lease—the legal right to exit at the time specified in the lease. Many tenants also invest in repairing or improving their rentals and cannot recoup those losses. Undercompensation frustrates climate-safe relocation by making it unaffordable for tenants to relocate to flood-safe zones.

There are a variety of ways to improve transition relief for low-income tenants, either within the URA or by expanding buyout laws to encompass tenants. Within the URA, regulation might substantially increase the total payment cap or offer additional URA reimbursement if the tenant signs a lease for a rental outside of a floodplain. Within disaster law, the government could amend buyout statutes to allow acquisition of tenants' leasehold interests using disaster relief funds. Valuation of the leasehold interest for buyout could be the difference between current and market rent plus the loss of the value of the full lease term and any investments made in the rental (e.g., repairs, improvements). Alternatively, we might compensate for the leasehold interest as a percentage of the value of the fee simple. A similar approach, the deductive percentage method, is sometimes used to value easements for eminent domain compensation when other valuation methods would undercompensate easement holders.<sup>285</sup> In-kind compensation is also an interesting possibility, one that might better make displaced tenants whole. For example, we could prioritize low-income, flood-displaced tenants for federal or state rental vouchers or other housing subsidies that would otherwise not be readily obtainable due to housing assistance scarcity.

In addition to transition relief for renters, there is also a role for subsidy to redress situations where low-income owners may have no choice but to accept a buyout because they cannot afford to comply with the NFIP regulations for reconstruction.<sup>286</sup> If flood damage to a

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284. *Id.* § 4624; 49 C.F.R. § 24.402(a) (2022).

285. See Ronald L. Baird, *Easement Condemnation and State v. Doyle: Fair Market Value Without a Market*, 6 ALASKA L. REV. 199, 212 (1989) (“Some appraisers will simply state an opinion that the value of the fee interest has been diminished by a given percentage . . . [which] is then multiplied by the value of the fee interest in the land affected by the easement to produce just compensation.”).

286. Scholars note the potential for the substantial damage rule to coerce unwilling residents who cannot afford repairs to accept buyouts. See Daniel H. De Vries & James C. Fraser,

home is greater than or equal to 50 percent of the structure's value, the owner must typically elevate their residence to meet locally adopted NFIP regulations governing flood-safe reconstruction.<sup>287</sup> Not only are lower-priced homes more vulnerable to a substantial damage designation (i.e., the same amount of damage is proportionally higher for lower-value homes), lower-income owners are less able to afford the necessary elevation and alteration requirements.<sup>288</sup> As a result, these households may be coerced, de facto, into accepting buyouts because they lack the funds for reconstruction.<sup>289</sup>

One solution is to offer the option for a reconstruction grant to low-income owners invited to participate in a local buyout, when home elevation would provide a necessary margin of flood safety. Under the current compensation model of buyouts, this type of subsidy is not typically available to homeowners within a buyout (although other provisions of the HMGP provide a limited amount of elevation funding and owners with NFIP can purchase additional insurance coverage for reconstruction).<sup>290</sup> Increasing funding for low-income owners to comply with reconstruction requirements, either as part of buyouts or elsewhere in hazard mitigation funding, would better effectuate the current legislative mandate that buyouts be voluntary. Such subsidies would also provide graduated options for adaptation versus retreat that are based on flood severity, rather than income.

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*Citizenship Rights and Voluntary Decision Making in Post-Disaster U.S. Floodplain Buyout Mitigation Programs*, 30 INT'L J. MASS EMERGENCIES & DISASTERS 1, 16–17 (2012) (discussing interviews with officials who described substantial damage rules as means to get lower-income families off the floodplains); Siders, *supra* note 39, at 249 (“Homeowners unable to afford modifications may find themselves feeling coerced to accept ‘voluntary’ buyouts due to financial constraints.”).

287. 44 C.F.R. § 60.3(c), (e) (2022) (describing rebuilding requirements); § 59.1 (2022) (defining “substantial damage” and “substantial improvement”).

288. See De Vries & Fraser, *supra* note 286, at 4, 17 (2012) (describing feelings of coercion and reports of local bias in declaring low-income homes substantially damaged and thus subject to strict reconstruction rules).

289. See Sherri Brokopp Binder & Alex Greer, *The Devil Is in the Details: Linking Home Buyout Policy, Practice, and Experience After Hurricane Sandy*, 4 POL. & GOVERNANCE 97, 102 (2016) (“For homeowners with limited financial means, the implications of [the reconstruction requirements following a substantial damage declaration] are not dissimilar to that of forced relocation.”).

290. See 44 C.F.R. § 61 app. III.D (2021) (providing increased-cost-of-compliance coverage); FEMA, *Elevation Grants Make Multiple Homes Safer* (2021), <https://www.fema.gov/case-study/elevation-grants-make-multiple-homes-safer> [<https://perma.cc/TYB3-U9AT>].

C. *True Retreat: Incentives for Climate-Safe Relocation Post-Buyout*

When the government offers climate transition relief for flood hazard, that funding should effectuate retreat to higher ground. Attention to relocation outcomes, meaning the flood safety of replacement housing, is conspicuously missing from dispossession-focused buyout laws. In a reconceptualized model of buyouts as climate transition relief, ensuring that residents actually transition to climate-safer housing is a principal concern.

Reforming buyout laws to promote flood-safe relocation could take a variety of forms, ranging from housing assistance to legal mandates. Least objectionably, the government could offer compensation bonuses for residents who relocate to flood-safe locations or, more broadly, low-climate-risk locations (including risks from wildfires, extreme heat, and drought). Another possibility is to offer tiered incentive payments with the largest bonuses allocated to households that relocate to the most climate-safe areas. Incentive payments are a familiar tool in buyouts but typically reward residents for relocating within the same county or promptly agreeing to a buyout.<sup>291</sup> Providing incentives for climate-safe, rather than proximate or speedy, relocation supports actual climate retreat.<sup>292</sup> Because localities implementing buyouts prefer to retain residents and tax revenues, the federal government may need to mandate that localities offer incentives for flood-safe relocation as a condition of funding buyout or offer incentive payments directly to participating residents.

Another uncontentious option is to reduce the transaction costs of securing flood-safe housing.<sup>293</sup> Recently, a federal pilot program employed “housing navigators” to assist rental voucher recipients with apartment searches and negotiations with landlords and provided

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291. *See id.* at 100 (discussing New York City’s use of financial incentives to encourage participation in the buyout in the aftermath of Hurricane Sandy).

292. Federal buyout programs could also augment buyout incentives for safe relocation by coordinating with climate-safer states and cities that offer tax breaks or incentive payments for workers who relocate, as some locations have done to spur growth. For a review of state and city incentive programs designed to attract remote workers and tech workers, see generally Stephanie M. Stern, *Untransit: Remote Work and the Transformation of Zoning*, 33 STAN. L. & POL’Y REV. 79 (2022).

293. *See, e.g.*, Bergman et al., *supra* note 231, at 13, 19–29 (finding that housing navigators increased moves to socioeconomically mobile neighborhoods for households with federal rental vouchers).

funds for security deposits and application fees when needed.<sup>294</sup> The housing navigators and other assistance increased placement in neighborhoods with high socioeconomic mobility more than threefold.<sup>295</sup> In flood buyouts, housing search assistance has historically been limited in scope and services. An intensive housing assistance approach, like the navigator program, could facilitate moves to climate-safe housing following buyout.

More controversially, the government could adopt robust disincentives for relocation to flood zones post-buyout. For example, it could prohibit future buyouts and other federal disaster aid for recipients who use buyout funds to relocate to another flood zone. Similarly, Congress could make buyout recipients ineligible for federal flood insurance, as well as buyout, in the future if they relocate to an area deemed a flood risk under FEMA's rating system.

Most restrictively, the government might make compensation contingent on the recipient's agreement to move to a residence outside the floodplain. This approach would be vulnerable to challenge under the unconstitutional conditions doctrine, which prohibits the government from conditioning a benefit on the recipient's agreement to forgo a constitutional right (e.g., associational rights), and as a violation of equal protection.<sup>296</sup> Its constitutionality would likely depend on the restrictiveness of the relocation mandate, the degree of danger posed by flooding, and the amount of choice retained by the buyout recipient. Even if a relocation mandate passed constitutional muster, however, high enforcement costs and friction would hinder implementation. In buyouts, there is frequently a delay between residents' departure from the acquired property and permanent resettlement, during which flooded households utilize interim housing or short-term rentals. This makes legal requirements for relocation difficult to track and easy to evade. On balance, voluntary approaches, such as incentives and housing search assistance, appear to be more promising options for reform because relocation mandates are legally and politically fraught and difficult to enforce.

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294. *Id.* at 13.

295. *See id.* (reporting only 15 percent in the control group rented in upwardly mobile communities versus 53 percent in the group assigned to navigators).

296. U.S. CONST. amend. XIV, § 1; *see* *Perry v. Sindermann*, 408 U.S. 593, 597 (1972) (“[E]ven though the government may deny him the benefit for any number of reasons, there are some reasons upon which the government may not rely. It may not deny a benefit to a person on a basis that infringes his constitutionally protected interests . . .”).



In summary, climate transition relief in flood zones (i.e., buyouts) should target low-income residents through means testing, provide relief and funding for renters as well as owners, and produce flood-safe relocation following buyout. Some of these reforms, such as means testing, could be implemented at the local or state level or by the federal government. Ideally, reform and implementation will occur cooperatively at multiple levels of government. The framing of buyouts as climate transition relief guides the buyout reforms this Part has discussed and provides a model for government and nongovernment actors to implement climate transition and retreat policies.

### CONCLUSION

This Article has proposed a model of climate transition relief for federal buyouts of flooded property, as well as other forms of climate change compensation and retreat. Currently, buyout laws operate within a disaster frame that subordinates the goal of shifting residential settlement to the immediate demand for individual compensation. This Article reconceptualizes buyouts as climate transition relief that addresses individual losses but simultaneously increases incentives for risk-taking and overinvestment. This Article advocates means testing buyouts to balance these competing concerns, as well as extending buyout or similar climate transition relief to tenants. Beyond federal buyouts, climate transition relief's lodestars of incentives, risk spreading, and social and market context can guide reforms in areas such as mortgage lending in flood zones, hazard insurance, and floodplain zoning and development.