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Public Insurance as a Lever for Semi-Managed Climate Retreat

Albert C. Lin
University of California, Davis, aclin@ucdavis.edu

PUBLIC INSURANCE AS A LEVER FOR SEMI-MANAGED CLIMATE RETREAT

Albert C. Lin[*]

Private insurers are declining to issue or renew homeowner policies in California, Colorado, Florida, and Louisiana following massive payouts due to hurricane and wildfire damage in recent years. As climate change worsens, more private insurers will withdraw from property insurance markets. Governments, particularly at the state level, will likely expand their insurance programs to fill the gap. Just as the federal government now underwrites most flood insurance policies, public insurers will come to dominate the fire and wind insurance markets.

Property insurance can generate price signals reflecting the risks of living in climate-vulnerable areas. However, public insurance programs often prioritize insurance availability and affordability while muting or eliminating accurate price signals. Because premiums collected by public insurance programs usually do not cover the payouts that follow a catastrophic event, expanding these programs could prove financially disastrous. Unfortunately, by offering underpriced coverage, such programs have encouraged development in climate-vulnerable areas, such as floodplains and the wildland-urban interface.

Managed retreat policies aim to move people and communities out of climate-vulnerable areas. Typically involving public buyouts of private property, managed retreat can mitigate the damage associated with climate change, counter inefficient building practices, and facilitate disaster recovery. Yet managed retreat is logistically and politically

[*] Professor of Law, University of California, Davis, School of Law. Thanks to the *Georgia Law Review* editors for organizing and hosting their symposium "Evolving Landscapes: American Land Use Law & Resiliency" and to symposium participants for their thoughtful remarks. Thanks also to Dean Kevin Johnson, Associate Dean Afra Afsharipour, the U.C. Davis School of Law, and the U.C. Davis Small Grant in Aid of Research program for supporting this project. Finally, thank you to Dorothy Wu for her research assistance.

challenging, and buyout programs thus far have had limited impact.

Linking public insurance with buyouts can promote access to insurance coverage, break the disaster-rebuild cycle, and jump-start the relocation of people and communities from climate-vulnerable areas. This Article proposes that public insurance coverage in climate-vulnerable areas be made contingent on insureds agreeing to buyouts if property damage exceeds a predetermined threshold amount. If a covered event causes property damage above the threshold, the government will choose between paying on the insurance policy or purchasing the property. The government's choice would depend on funding availability, the value of the property as open space, the presence of other buyout properties nearby, the history of repetitive loss, and other relevant factors.

The proposed mechanism, which can be incorporated into federal or state-backed insurance programs, would make the most of disaster-caused damage by compelling retreat after such damage has occurred. It would also sidestep some of the difficulties that have hampered voluntary buyout programs. Part I of this Article discusses the growing reluctance of private insurers to offer policies in climate-vulnerable areas, the accompanying rise of state-backed insurance, and ongoing managed retreat efforts. Part II considers the objectives of public insurance programs. Part III shows how governments might try to advance these objectives as climate change worsens. In the context of a dramatically expanded government role as an insurer of last resort, the proposal can facilitate managed retreat without compromising these objectives.

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I. BACKGROUND

A. DETERIORATION OF THE PRIVATE INSURANCE MARKET

Many areas subject to high hurricane risk have witnessed rapid population growth in recent years.[1] Similar growth has occurred in areas of high wildfire risk.[2] At the same time, catastrophic risks have been increasing as sea levels rise and storms and droughts intensify.[3] The number of structures destroyed by wildfires tripled between 2016 and 2022.[4] Insurers paid out a record $295.8 billion in natural disaster claims between 2020 and 2022.[5] And in 2023, the United States experienced a record number of weather and climate disasters that individually caused losses in excess of $1 billion (28, far above the long-term average of 8.5 such disasters per year).[6] As

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[1] *See* Renee Cho, *With Climate Impacts Growing, Insurance Companies Face Big Challenges*, COLUM. CLIMATE SCH. (Nov. 3, 2022), https://news.climate.columbia.edu/2022/11/03/with-climate-impacts-growing-insurance-companies-face-big-challenges/ [https://perma.cc/S82J-69DW] ("[F]rom 2016 to 2020, more people moved to high risk areas such as Florida, Texas, Arizona and Nevada, than to low risk areas . . . ."); Alice C. Hill, *Climate Change and U.S. Property Insurance: A Stormy Mix*, COUNCIL ON FOREIGN REL. (Aug. 17, 2023, 4:17 PM), https://www.cfr.org/article/climate-change-and-us-property-insurance-stormy-mix [https://perma.cc/P5ST-EFTC] (noting population growth in southern states vulnerable to hurricanes and sea-level rise).

[2] Cho, *supra* note 1 ("From 1990 to 2010, the number of houses in the wildland-urban interface—the area close to forests and thus at risk for wildfires—grew 46 percent."); FIRST ST. FOUND., THE 9TH NATIONAL RISK ASSESSMENT: THE INSURANCE ISSUE 8–9 (2023), https://report.firststreet.org/9th-National-Risk-Assessment-The-Insurance-Issue.pdf [https://perma.cc/5ANC-NX4V] (describing growth in fire-prone wildland-urban interface).

[3] *See* Alexa K. Jay et al., *Overview: Understanding Risks, Impacts, and Responses*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 2, 17 (Emily K. Laidlaw ed., 2023), https://nca2023.globalchange.gov/ [https://perma.cc/EG5Z-KG5J] ("Harmful impacts from more frequent and severe extremes are increasing across the country—including increases in heat-related illnesses and death, costlier storm damages, longer droughts that reduce agricultural productivity and strain water systems, and larger, more severe wildfires that threaten homes and degrade air quality.").

[4] FIRST ST. FOUND., *supra* note 2, at 7 (showing 3,238 structures destroyed in 2016 and 10,194 destroyed in 2022).

[5] *See* Jacob Bogage, *Home Insurers Cut Natural Disasters from Policies as Climate Risks Grow*, WASH. POST (Sept. 3, 2023, 7:30 AM), https://www.washingtonpost.com/business/2023/09/03/natural-disaster-climate-insurance/ (reporting results of analysis by international risk management firm Aon).

[6] *Billion-Dollar Weather and Climate Disasters*, NOAA NAT'L CTRS. FOR ENV'T INFO. (Feb. 14, 2024, 11:00 AM), https://www.ncei.noaa.gov/access/billions/ [https://perma.cc/SQU5-

climate change worsens, the magnitude of risks, uncertainty, and resulting damage will only continue to grow.[7]

Catastrophic risks tend to involve extreme and spatially correlated damage.[8] Such damage may be hard to predict or price.[9] Catastrophic risks pose particular challenges for insurers, who must "match[] regular premium payments, which are insufficient in any given year to cover a large loss, with the need for enormous sums of capital in a catastrophic year."[10] In addition to the difficulty of projecting damages and setting matching premiums, private insurers face legal and practical barriers to accumulating the large cash reserves needed to cover catastrophic losses.[11] For example, insurers' assets are taxed in the year they are set aside, disincentivizing the creation of large reserves.[12] In addition, insurance companies that accumulate large cash reserves can become takeover targets for investors intending to deploy the cash

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94ZV]. Weather and climate disasters in the U.S. caused nearly $400 billion in damage in 2017 alone. *Id.*

[7] *See* FIRST ST. FOUND., *supra* note 2, at 11 (projecting a yearly increase in structures destroyed by wildfires); Jon Sindreu, *Climate Risk Is Becoming Uninsurable. Better Forecasting Can Help.*, WALL ST. J. (Oct. 30, 2023, 6:52 AM) ("Underwriting requires confidence that models somewhat accurately reflect risks, which climate change is amplifying in scary, unknown ways.").

[8] *See* Carolyn Kousky, *Managing Natural Catastrophe Risk: State Insurance Programs in the United States*, 5 REV. ENV'T ECON. & POL'Y 153, 154 (2011) (explaining that catastrophic risks are spatially correlated and "fat-tailed"—i.e., "the probability of an event declines slowly relative to its severity"); Katherine R.H. Wagner, *Designing Insurance for Climate Change*, 12 NATURE CLIMATE CHANGE 1070, 1071 (2022) ("[N]atural disasters create spatially correlated losses for insurers.").

[9] *See* Omri Ben-Shahar & Kyle D. Logue, *The Perverse Effects of Subsidized Weather Insurance*, 68 STAN. L. REV. 571, 584 (2016) (explaining how weather calamities may be too difficult to predict with prevailing actuarial practices).

[10] Kousky, *supra* note 8, at 154; *see also* Howard Kunreuther, *The Role of Insurance in Reducing Losses from Extreme Events: The Need for Public-Private Partnerships*, 40 GENEVA PAPERS 741, 742 (2015) (explaining the difficulty of insuring against low-probability, high-consequence events); Christopher C. French, *America on Fire: Climate Change, Wildfires & Insuring Natural Catastrophes*, 54 U.C. DAVIS L. REV. 817, 831 (2020) (observing that insurers generally "avoid insuring correlated risks due to actuarial and capitalization concerns").

[11] *See* French, *supra* note 10, at 849 (discussing barriers faced by private insurers).

[12] U.S. GOV'T ACCOUNTABILITY OFF., GAO-08-7, NATURAL DISASTERS: PUBLIC POLICY OPTIONS FOR CHANGING THE FEDERAL ROLE IN NATURAL CATASTROPHE INSURANCE 41 (2007) ("[A]ssets set aside for catastrophe losses, together with any interest accrued, are taxed as corporate income in the year in which they are set aside.").

for other purposes.[13] To address growing risk exposure, insurers have hiked premiums dramatically in climate-vulnerable areas.[14] Over the last five years, Florida has witnessed a tripling of home insurance premiums—to an average annual premium of $6,000.[15]

Regulators have sought to protect consumers by limiting rate increases.[16] In California, insurance rates must be approved in advance by the elected state insurance commissioner, and rate increases exceeding 7% on personal lines are subject to public hearings.[17] Insurers in California tend to request increases below this threshold to expedite rate approvals. As wildfire losses have skyrocketed in recent years, approved rate increases have not kept up with insurance payouts.[18] California regulations further constrain rate hikes by effectively barring insurance companies from passing reinsurance costs to insureds and from using forward-

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[13] *See* French, *supra* note 10, at 849 (describing how companies "with large amounts of accumulated cash" become "attractive takeover targets for investors").

[14] *See Insurers Withdraw from Riskiest Areas as Threats from Climate Change Grow*, NPR (July 22, 2023, 6:00 A.M.) [hereinafter *Insurers Withdraw*], https://www.npr.org/transcripts/1186540332 [https://perma.cc/56RZ-TM2R] (outlining the drastic increase in home insurance costs in "hotspots" like Colorado, Texas, and Florida).

[15] *See* Deborah Acosta, *Home Insurance Is So High in This Florida Town, Residents Are Leaving*, WALL ST. J. (Oct. 17, 2023, 8:57 A.M.), https://www.wsj.com/real-estate/home-insurance-is-so-high-in-this-florida-town-residents-are-leaving-bb00c96f (describing the tripling of home insurance premiums in Florida over the past five years); *Parts of America Are Becoming Uninsurable*, ECONOMIST (Sept. 21, 2023), https://www.economist.com/united-states/2023/09/21/parts-of-america-are-becoming-uninsurable ("In Florida the average home-insurance premium in 2023 is around $6000 . . . .").

[16] *See* Kousky, *supra* note 8, at 155 ("U.S. insurance commissioners tend to weight the affordability and availability of policies more heavily than solvency considerations or management of catastrophe risk."); Juliette Kayyem, *What Your Insurer Is Trying to Tell You About Climate Change*, ATLANTIC (Aug. 28, 2023), https://www.theatlantic.com/ideas/archive/2023/08/home-insurance-costs-wildfires-floods-weather/675141/ [https://perma.cc/CH6K-D7SP] (stating that insurers are regulated by states with officials whose jobs are to make sure companies do not overcharge ratepayers); FIRST ST. FOUND., *supra* note 2, at 21 (describing insurance commissioners' efforts to order rate reductions).

[17] CAL. INS. CODE § 1861.05 (West 2023) (requiring a hearing when a "proposed rate adjustment exceeds 7%"); *Proposition 103 Consumer Intervenor Process*, CAL. DEP'T INS., https://www.insurance.ca.gov/01-consumers/150-other-prog/01-intervenor/ [https://perma.cc/X8BL-2JS4] (discussing Proposition 103 requiring the California Insurance Commissioner to approve an insurer's rate before use).

[18] *Insurers Withdraw*, *supra* note 14 ("[Y]ou're seeing a gradual increase in rates to catch up with the increases in costs.").

looking catastrophe models to justify rate increases.[19] The resulting scenario—in which insurance rates and home valuations fail to reflect increasing climate risk accurately—has been described as "a growing climate bubble."[20]

The challenges of ballooning climate risks, combined with rising construction costs and efforts by state regulators to keep premiums low, have led some insurers to conclude that offering coverage for such risks is no longer financially viable.[21] Decades ago, private insurers slashed coverage for flood damage, leaving matters largely to the federal National Flood Insurance Program (NFIP).[22] Today, in the wake of significant damage from hurricanes, wildfires, and other disasters, multiple Florida, California, Louisiana, and Colorado insurers have reduced their coverage for wildfire and wind or left the home insurance market entirely.[23] These departures

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[19] *See* Sam Dean, *California Home Insurers Plan Return to Fire Zones Under New Deal*, L.A. TIMES (Sept. 21, 2023), https://www.latimes.com/business/story/2023-09-21/california-home-insurers-plan-return-to-fire-zones-under-new-deal [https://perma.cc/FA7M-543V] (describing the California regulatory regime barring insurance companies from passing along costs of reinsurance to consumers); Thomas Frank, *Calif. Scared Off Its Biggest Insurer. More Could Follow.*, E&E NEWS (May 31, 2023, 6:31 A.M.), https://www.eenews.net/articles/calif-scared-off-its-biggest-insurer-more-could-follow/ [https://perma.cc/2HCR-F4G7] (explaining that "Prop 103 has made it almost impossible to set premiums based on computer models that project future risks including climate impacts" because it "requires modeling used by insurers to be made public, which modeling companies want to avoid"); CAL. CODE REGS. tit. 10, § 2644.5 (West 2024) (outlining requirements for catastrophe rate adjustment in California); *id.* § 2644.25 (providing regulations on reinsurance in California).

[20] FIRST ST. FOUND., *supra* note 2, at 5.

[21] *See Insurers Withdraw*, *supra* note 14 ("Over the past two years, several big insurers, including Allstate and State Farm, have scaled back their home insurance businesses in California to avoid paying billions for wildfire damage, or have halted sales of new policies altogether."); Ali Martin, *From Florida to California, Dwindling Insurance Options*, CHRISTIAN SCI. MONITOR (Aug. 31, 2023), https://www.csmonitor.com/USA/2023/0831/From-Florida-to-California-dwindling-insurance-options [https://perma.cc/G3CN-DYDT] ("In the past few years, nearly a dozen property insurers in Florida have liquidated. More have either left the state or restricted coverage, including Farmers Insurance, which pulled out of the Sunshine State last month."); Bogage, *supra* note 5 ("In the aftermath of extreme weather events, major insurers are increasingly no longer offering coverage that homeowners in areas vulnerable to those disasters need most.").

[22] *See* FIRST ST. FOUND., *supra* note 2, at 28 ("[M]any properties across the United States rely on flood insurance coverage from FEMA's National Flood Insurance Program (NFIP).").

[23] Acosta, *supra* note 15 (describing West Palm Beach, Florida, residents being forced to leave their homes as a result of home insurance rates); *Parts of America Are Becoming Uninsurable*, *supra* note 15 (describing increased population growth despite treacherous conditions that threaten insurability in California, Florida, and Texas); FIRST ST. FOUND.,

include some of the most prominent players in the business; in California, for example, AIG, Allstate, Chubb, Farmers, and State Farm have stopped or limited sales of homeowner policies in the wake of expanding wildfire risks and high construction costs.[24] Low levels of insurer participation and high levels of policy non-renewals have left some areas of California "essentially 'uninsurable.'"[25]

These developments represent only the tip of the iceberg. An estimated 6.8 million properties nationwide have experienced higher insurance rates or canceled policies due to increased climate risk.[26] Yet even this figure represents a small fraction of the estimated 39 million properties in the United States that face "risk of increasing insurance prices or reduced coverage due to high climate risk."[27]

To reverse the wave of private insurers withdrawing from California, the state's insurance commissioner announced in September 2023 a package of planned regulatory reforms.[28] In wildfire-distressed areas, insurers will have to write policies at a level equivalent to at least 85% of their statewide market share.[29] In return, insurers will be allowed to rely on catastrophic modeling that accounts for projected climate risks and to incorporate reinsurance costs in calculating rates.[30] Through these reforms, the

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supra note 2, at 22 ("These factors have led many insurance companies to limit their exposure by either increasing premiums or pulling out of certain high-risk regions altogether . . . ."); Cho, *supra* note 1 (describing increasing premiums, rising deductibles, refusals to renew coverage, and denials of coverage); *see Insurers Withdraw*, *supra* note 14 ("Insurance companies in states like Colorado, Louisiana, and Florida are paring down business to shield themselves from ballooning losses as climate change fuels more-intense disasters.").

[24] *See Insurers Withdraw*, *supra* note 14 ("Other big insurers followed Chubb's lead, including AIG, Allstate and State Farm.").

[25] FIRST ST. FOUND., *supra* note 2, at 23.

[26] *Id.* at 31 ("[T]his means that there are approximately 6.8 million properties across the country that have already been hit by increasing insurance rates, canceled policies, and the realization of property value devaluation due to increased cost of ownership.").

[27] *Id.* at 30.

[28] *See* Dean, *supra* note 19 ("Insurance Commissioner Ricardo Lara announced Thursday that he struck a deal with the insurance industry to encourage new coverage in the state.").

[29] *See id*. ("Under this new deal, insurers have agreed to return to those fire risk zones up to a certain threshold equivalent to 85% of their statewide market share.").

[30] *See id*. ("Now, Lara said, he plans to go ahead and allow insurers to use catastrophe modeling that takes into account the projected impacts of climate change and other shifting factors when asking to raise rates . . . . Companies will be allowed to use these models only if they comply with their commitment to increase coverage in the state and reduce the FAIR plan population."); Press Release, Cal. Dep't of Ins., Commissioner Lara Announces Next

state hopes to stabilize the insurance market and reduce the number of homeowners relying on the state-backed insurer of last resort.[31]

B. GOVERNMENT-BACKED INSURANCE PROGRAMS

Homeowners who face rising insurance premiums can pay the higher premiums, go without insurance, or sell their homes. However, because lenders uniformly require insurance coverage, going without insurance is not an option for homeowners with a mortgage.[32]

In many states, a public program offers insurance coverage to homeowners who are unable to obtain coverage in the private market.[33] These programs, which may be run by states directly or by a pool of private companies, require private insurers operating in the state to participate by financing the program ex ante or by paying assessments ex post.[34] State insurance programs include Fair Access to Insurance Requirements (FAIR) plans, wind pools, hybrid programs, and reinsurance funds.[35] Public insurance

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Phase of Sustainable Insurance Strategy to Safeguard Californians' Access to Insurance (Mar. 14, 2024), https://www.insurance.ca.gov/0400-news/0100-press-releases/2024/release011-2024.cfm [https://perma.cc/3AB6-TJ4R].

[31] Dean, *supra* note 19.

[32] *See* Acosta, *supra* note 15 (describing a family who was forced to sell their home because insurance costs "made staying there too expensive"); FIRST ST. FOUND., *supra* note 2, at 20 ("All homes with a mortgage are required by lenders to have homeowners insurance."); French, *supra* note 10, at 847 (noting that "homeowners insurance is effectively mandatory for most homeowners because anyone who needs to borrow money from a bank to purchase a house is required to have homeowners insurance as a prerequisite to obtaining a mortgage").

[33] Kayyem, *supra* note 16. Applicants usually must satisfy eligibility requirements such as proof of coverage denials by private insurers. *See* Kousky, *supra* note 8, at 156 ("Many programs have eligibility requirements intended to ensure that policies are purchased only as a last resort.").

[34] *See* Kousky, *supra* note 8, at 164 (describing the "two principal approaches for involving private insurers in state programs"). Some of these programs, such as Florida Citizens and Louisiana Citizens, were established as municipalities and thus cannot readily declare bankruptcy. *See* U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 12, at 24 (discussing programs that "have been declared to be municipalities rather than insurance companies by their respective state legislatures, and as a result cannot declare bankruptcy until the bond obligations are satisfied").

[35] *See* Kousky, *supra* note 8, at 155 (identifying the various forms taken by state insurance programs); *see also* Carolyn Kousky, *The Role of Natural Disaster Insurance in Recovery and Risk Reduction*, 11 ANN. REV. RES. ECON. 399, 404 (2019) [hereinafter Kousky, *Role of*

programs were initially intended to provide only temporary last-resort policies for homeowners and were often established after a disaster prompted concerns about the cost or availability of insurance.[36]

The recent withdrawal of private insurance companies from the market has fueled the expansion of these programs.[37] Enrollment in last-resort plans in California, Florida, and Louisiana has more than doubled over the last five years.[38] Florida's plan, Citizens Property Insurance Corporation, now insures more homes—1.4 million—than any other insurer in the state.[39] In California, the share of the home insurance market covered by its insurer of last resort—the California FAIR plan—has doubled over five years, with much of that increase occurring in the last year.[40] Though limited

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Disaster Insurance] (discussing federal legislation in 1968, which made federal riot insurance available to states that created FAIR plans for residents otherwise unable to obtain coverage); Kousky, *supra* note 8, at 155 ("[W]ind pools (or 'beach plans') . . . provide wind-only coverage in certain high-risk areas."); *id.* (noting that hybrid programs offer both complete coverage as well as hazard-specific coverage).

[36] *See* Jean Eaglesham, *Homeowners Flock to Last-Resort Insurance Policies*, WALL ST. J. (Oct. 4, 2023, 7:26 AM), https://www.wsj.com/finance/homeowners-flock-to-last-resort-insurance-policies-a7ae9439 (describing how "plans are becoming insurers of first, not last, resort in some high-risk areas"); *see also* Kousky, *Role of Disaster Insurance*, *supra* note 35, at 404 (noting that "most government programs were created in the aftermath of a large disaster" after "the withdrawal of private insurance companies or increases in premiums that led to political upset"); *see also* Kousky, *supra* note 8, at 161 (explaining how as states allow insurers to charge higher rates that more accurately reflect risk, insurers and homeowners are expected to return to the private market).

[37] *See* Kousky, *supra* note 35, at 156 ("Most of these programs have been expanding.").

[38] Eaglesham, *supra* note 36; *see also* FIRST ST. FOUND., *supra* note 2, at 24 (highlighting a 500% increase in number of California homeowners enrolled in FAIR).

[39] Eaglesham, *supra* note 36. Citizens has grown not only because of private insurers' retreat, but also because of its own limited rate increases, relaxed eligibility requirements, low deductibles, and generous coverage limits. *See* Kousky, *supra* note 8, at 163–64 (describing how Florida's program has "more actively competed with the private market").

[40] *See* Dean, *supra* note 19 (reporting that FAIR plan now has 3% of the state market share); *see also* Levi Sumagaysay, *'Prompt Action' on Fire Insurance Has Yet to Help California Homeowners*, CALMATTERS (Nov. 8, 2023), https://calmatters.org/housing/2023/11/fire-insurance-california/ [https://perma.cc/PEF8-DCCR] (arguing that while "state regulators craft new regulations and consult with the insurance industry, many Californians are paying extra-high premiums—or going without insurance entirely"); *see generally About FAIR Plan*, CAL. FAIR PLAN ASS'N, https://www.cfpnet.com/about-fair-plan/ [https://perma.cc/6HK4-2UD2] ("The FAIR Plan is a syndicated fire insurance pool comprised of all insurers licensed to conduct property/casualty business in California. The FAIR Plan was established by statute. . . . Each member company

and expensive, FAIR's coverage is increasingly the only option available to California homeowners.[41] These trends of shrinking private coverage and expanding state-backed coverage will likely continue as climate change worsens.[42]

Although last-resort insurance plans tend to be expensive, political pressure and legal constraints limit these plans' ability to increase rates.[43] As a result, rates are often too low to cover projected risks.[44] Reinsurers, policyholders, or taxpayers have to pick up the tab if a state-backed insurer's premiums, investment income, and reserves are insufficient to pay out claims.[45] To cover excessive losses, Florida's Citizens program imposes an ex-post

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participates in the profits, losses and expenses of the Plan in direct proportion to its market share of business written in the state."). The FAIR Plan can reduce its risk exposure by purchasing reinsurance. CAL. INS. CODE § 10095(b) (West 2024); *see also* Kassandra Jimenez-Sanchez, *FAIR Plan "One Event" Away from Needing a Large Assessment Warns Roach*, REINSURANCE NEWS, Mar. 26, 2024, https://www.reinsurancene.ws/fair-plan-one-event-away-from-needing-a-large-assessment-warns-roach/ [https://perma.cc/4W5U-X9ZU] (noting that the "FAIR Plan has $4.8 billion in reinsurance arrangements, but each layer of the reinsurance tower includes co-insurance that means members would be assessed to support in paying claims").

[41] *See* Matthew Kupfer, *California Homeowners' 'Insurer of Last Resort' Quickly Becoming Only Viable Option*, S.F. STANDARD (June 5, 2023, 6:30 AM), https://sfstandard.com/2023/06/05/as-insurers-retreat-california-homeowners-may-need-the-fair-plan-so-what-is-it/ [https://perma.cc/S8J4-K7AF] (explaining that "more California homeowners will have to sign up for the FAIR Plan" as a result of "a broader trend in which insurers retreat from insuring California homeowners due to wildfire risks, climate change and construction costs that outpace inflation").

[42] *See Climate Change Is Coming for America's Property Market*, ECONOMIST (Sept. 21, 2023), https://www.economist.com/leaders/2023/09/21/climate-change-is-coming-for-americas-property-market (explaining that climate change makes extreme weather more common).

[43] Eaglesham, *supra* note 36; Ben-Shahar & Logue, *supra* note 9, at 571, 590–91 (noting regulatory limits on premium increases by Citizens). In Florida, Citizens' limited ability to raise rates has left its rates 40% lower than private insurance rates. *See* Alejandro de la Garza, *The 'Hurricane Tax' Hitting Florida Alongside Idalia*, TIME (Aug. 30, 2023, 4:47 PM), https://time.com/6309815/floridas-broken-home-insurance-market-is-creating-a-hurricane-tax/ [https://perma.cc/35JH-UEGA] ("Private insurance rates in Florida have climbed sharply in recent years; Citizens rates are generally about 40% lower . . . .").

[44] *See* Eaglesham, *supra* note 36 (reporting that Texas Windstorm Insurance Association "charges homeowners 20% less than the rate needed to cover the underlying risks" and that Florida's last-resort plan also charges actuarially insufficient premiums). In theory, public insurance programs face fewer constraints on accumulating the reserves needed to cover catastrophic losses. French, *supra* note 10, at 850. In practice, however, these programs rarely collect sufficient premiums to accumulate significant reserves. *Id.* at 867.

[45] Eaglesham, *supra* note 36; Kousky, *supra* note 8, at 156.

assessment, first on its own policyholders and then, if necessary, on *all* insurance policyholders within the state (including automobile and other policyholders).[46] In addition, the State of Florida appropriated $715 million in general funds for the Citizens program to cover losses from severe hurricane damage in 2005.[47] Citizens' financial position is especially precarious today because of its extensive exposure in high-risk coastal areas.[48]

Perhaps the best-known government-backed property insurance program is the federal National Flood Insurance Program. A detailed discussion of the NFIP is beyond the scope of this Article. Nevertheless, a brief look at the program demonstrates governments' tendencies to prioritize affordability and availability in insuring homeowners against catastrophic harms, even at the risk of program insolvency.[49]

Flood insurance is mandatory for homeowners who live in a high-risk flood area and have a mortgage from a federally regulated or insured lender.[50] Lenders may also require flood insurance coverage outside of high-risk areas.[51] Flood zone homeowners without a

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[46] Kousky, *supra* note 8, at 163–64; U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 12, at 23–24 (discussing assessments imposed by Florida Citizens, as well as other state programs). California's FAIR plan currently faces a $332 million deficit that could require it to impose a special assessment on all California insurers. Frank, *supra* note 19.

[47] *See* Kousky, *supra* note 8, at 168 ("[T]o cover losses from 2005, the Florida legislature appropriated $715 million, but Citizens still had to issue assessments.").

[48] *See id.* at 167 ("Not only is Citizens the largest insurer in the state, most of its exposure is in high-risk coastal areas.").

[49] *See generally* U.S. GOV'T ACCOUNTABILITY OFF., GAO-21-578, NATIONAL FLOOD INSURANCE PROGRAM: CONGRESS SHOULD CONSIDER UPDATING THE MANDATORY PURCHASE REQUIREMENT 1, 44 (2021), https://www.gao.gov/assets/gao-21-578.pdf [https://perma.cc/9DV5-TZD5] (providing an overview of potential NFIP reforms); Dena Adler, Michael Burger, Rob Moore & Joel Scata, *Changing the National Flood Insurance Program for a Changing Climate*, 49 ENV'T L. REP. 10320, 10320 (2019) (discussing "strategies to change the NFIP for a changing climate").

[50] *See* 42 U.S.C. § 4012a(b)(1)(A) ("Each Federal entity for lending regulation . . . shall by regulation direct regulated lending institutions—not to make, increase, extend, or renew any loan . . . unless the building or mobile home and any personal property securing such loan is covered for the term of the loan by flood insurance . . . ."); U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 49, at 1–2, 9 (providing an overview of FEMA's "mandatory purchase requirement"). Lenders must escrow flood insurance premiums or force place insurance coverage and are subject to penalties if flood insurance is not purchased. *Id.* at 13–14.

[51] *See* FED. EMERGENCY MGMT. AGENCY, WHO'S REQUIRED TO HAVE FLOOD INSURANCE?, https://www.floodsmart.gov/am-i-required-have-flood-insurance [https://perma.cc/96BA-

mortgage—often retirees or persons who inherited their homes—sometimes go without flood insurance because of its cost.[52]

Homeowners who do purchase flood insurance typically do so through the NFIP, which Congress established in 1968 to address the scarcity of affordable coverage for flood damage.[53] Today, the NFIP provides coverage for "$1.28 trillion in assets" in flood-prone areas through some "5 million policies."[54] Coverage for homeowners is capped at $250,000 for each building and $100,000 for building contents.[55] 72% of NFIP policies are written for primary residences, with a minority of policies covering vacation homes or rental properties.[56] Although the NFIP also offers incentives for communities to adopt improved building, land use, and floodplain management practices, the program's subsidized rates have likely increased exposure to flood risk by facilitating housing construction and reconstruction in floodplains.[57]

NFIP premiums fall far short of covering payouts. The program currently faces a debt exceeding $20 billion, even after Congress canceled $16 billion in program debts in 2017.[58] Efforts to

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88M9] ("While flood insurance is not federally required if you live outside of the high-risk area, your lender may still require you to have insurance.").

[52] *See* REBECCA ELLIOTT, UNDERWATER: LOSS, FLOOD INSURANCE, AND THE MORAL ECONOMY OF CLIMATE CHANGE IN THE UNITED STATES 171 (Dana R. Fisher et al. eds., 2021) ("[A] lot of people in flood zones are lower-income families who have either inherited their homes . . . or who are retirees. They . . . are 'particularly sensitive to the financial burden of flood insurance . . . .'" (quoting FED. EMERGENCY MGMT. AGENCY, AN AFFORDABILITY FRAMEWORK FOR THE NATIONAL FLOOD INSURANCE PROGRAM 13 (2018), https://www.fema.gov/sites/default/files/2020-05/Affordability_april_2018.pdf [https://perma.cc/2BT3-MASR])).

[53] *See* Ben-Shahar & Logue, *supra* note 9, at 587 (noting that NFIP policies "dominate the flood-risk market.").

[54] *See* FED. EMERGENCY MGMT. AGENCY, NATIONAL FLOOD INSURANCE PROGRAM: MEDIA TOOLKIT 3 (2023), https://agents.floodsmart.gov/sites/default/files/fema_nfip-media-toolkit-07-2023.pdf [https://perma.cc/VK36-XDHQ] (summarizing the extent of NFIP coverage).

[55] *See id.* at 4 (containing a graphic showing the maximum coverage amounts for buildings).

[56] *See* ELLIOTT, *supra* note 52, at 169 ("About 72 percent of all NFIP policies are written for primary residences, meaning people's homes rather than investment or rental properties.").

[57] *See* Becky Hayat & Robert Moore, *Addressing Affordability and Long-Term Resiliency Through the National Flood Insurance Program*, 45 ENV'T L. REP. 10338, 10340 (2015) ("Unfortunately, the program has had a poor track record for managing the nation's flood risk. Subsidized insurance rates, out-of-date flood maps, and policies that fail to discourage repetitive risk-taking have arguably *increased* the nation's overall flood hazards and losses.").

[58] *See NFIP Debt*, FED. EMERGENCY MGMT. AGENCY (Nov. 4, 2022), https://www.fema.gov/case-study/nfip-debt [https://perma.cc/3PLA-BHXN] (describing the

incorporate risk into premiums have proceeded haltingly. Although risk-based pricing and other reforms were enacted in the 2012 Biggert-Waters Act, public outcry over rising premiums led Congress to rollback the bulk of these reforms just two years later.[59] More recently, in 2022, the NFIP introduced a probabilistic flood risk model (Risk Rating 2.0), as a result of which premiums are gradually increasing but continuing to lag far below actuarially sound levels.[60]

An important contributor to the NFIP's sizable debt is the incurrence of severe and repeated losses at properties especially vulnerable to flooding.[61] Even after significant damage to a property, the NFIP generally continues to provide subsidized coverage to the policyholder, often without requiring owners to undertake needed risk-reduction measures.[62] As sea levels rise, the

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NFIP's debt to the U.S. Treasury); U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 49, at 7 ("As of August 2020, FEMA's debt was $20.5 billion, despite Congress having canceled $16 billion in debt in October 2017.").

[59] *See* U.S. DEP'T HOMELAND SEC., AN AFFORDABILITY FRAMEWORK FOR THE NATIONAL FLOOD INSURANCE PROGRAM, at ii (2018) (detailing Congress's rollback of the 2012 Act); Ben-Shahar & Logue, *supra* note 9, at 579, 588–89 ("Immediately after it was enacted, subsidy recipients, now scheduled to lose their discounts, protested, and Congress quickly reacted—again, with a rare showing of bipartisan consensus—enacting an almost full repeal of the 2012 reform."); Hayat & Moore, *supra* note 57, at 10341–42 (discussing Congress's rollback of reforms).

[60] *See* Jeff Masters, *Bubble Trouble: Climate Change Is Creating a Huge and Growing U.S. Real Estate Bubble*, YALE CLIMATE CONNECTIONS (Apr. 10, 2023), https://yaleclimateconnections.org/2023/04/bubble-trouble-climate-change-is-creating-a-huge-and-growing-u-s-real-estate-bubble/ [https://perma.cc/5CD2-95ED] ("An NFIP reform implemented last year, Risk Rating 2.0, aims to . . . set[] rates based on the risks at the exact location of a property. (This rate-setting formula has drawn considerable criticism, since it is partially based on proprietary data sets held by private companies, which prevents ratepayers from knowing the justification for the price changes."); U.S. GOV'T ACCOUNTABILITY OFF., FEMA'S NEW RATE-SETTING METHODOLOGY IMPROVES ACTUARIAL SOUNDNESS BUT HIGHLIGHTS NEED FOR BROADER PROGRAM REFORM 30 (2023) ("Affordability concerns are growing as NFIP premiums continue to increase over time . . . .").

[61] *See* Dena Adler & Joel Scata, *Breaking the Cycle of "Flood-Rebuild-Repeat": Local and State Options to Improve Substantial Damage and Improvement Standards in the National Flood Insurance Program*, SABIN CTR. FOR CLIMATE CHANGE L. 2–3 (2019) ("[C]limate change puts . . . already vulnerable properties at even greater risk and current NFIP policies do not adequately ensure property owners rebuild in a manner to lessen their vulnerability to flooding or incentivize property owners to relocate to areas with a lower risk of flooding.").

[62] *See* Hayat & Moore, *supra* note 57, at 10341 (discussing repetitive loss properties and the disaster-rebuild cycle).

number of properties facing severe and repeated losses is expected to jump by thirty-fold or more in the coming decades.[63]

C. MANAGED RETREAT . . . OR NOT

By subsidizing housing in flood zones and the wildland-urban interface, government-backed insurance programs work at cross-purposes with efforts to shift populations away from high-risk areas. At the heart of those efforts is managed retreat—the deliberate removal of vulnerable homes and other structures to reduce risk exposure. Managed retreat will be an increasingly necessary climate adaptation response to rising sea levels, intense floods, and destructive wildfires.[64] If planned and coordinated, it can reduce the dislocation, suffering, and costs associated with climate change.[65]

Managed retreat can take place through buyouts, conservation easements, setback requirements, and other mechanisms. In the United States, managed retreat has primarily involved voluntary buyouts of flood-prone properties funded by the Federal Emergency Management Agency (FEMA) and implemented by state and local governments.[66] Under FEMA's core buyout program, the Hazard Mitigation Grant Program, an affected community subject to a presidential disaster declaration initiates the buyout process through an application to the state.[67] The state reviews and

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[63] *See* Adler et al., *supra* note 49, at 10321–22 (detailing the threat of rising sea levels).

[64] *See* Judy Lawrence et al., *Implementing Pre-Emptive Managed Retreat: Constraints and Novel Insights*, 6 CURRENT CLIMATE CHANGE REPS. 66, 67 (2020) (discussing the managed retreat strategy in the context of flooding); *see also* A.R. Siders, *Managed Retreat in the United States*, 1 ONE EARTH 216, 217 (2019) (detailing the use of managed retreat to prevent wildfire damage).

[65] *See* Siders, *supra* note 64, at 217, 222–23 (discussing managed retreat as a tool to combat climate change).

[66] *See* Katharine J. Mach et al., *Managed Retreat Through Voluntary Buyouts of Flood-Prone Properties*, 5 SCI. ADVANCES 1 (2019) (detailing the structure of managed retreat programs); *see also* DIANE P. HORN, CONG. RSCH. SERV., IN11911, FLOOD BUYOUTS: FEDERAL FUNDING FOR PROPERTY ACQUISITION 1–2 (2023) (listing federal programs that fund flood buyouts).

[67] *See* OFF. INSPECTOR GENERAL, DEP'T HOMELAND SEC., OIG-22-46, FEMA NEEDS TO IMPROVE OVERSIGHT AND MANAGEMENT OF HAZARD MITIGATION GRANT PROGRAM PROPERTY ACQUISITIONS 1, 3 (2022) (explaining the Hazard Mitigation Grant Program and highlighting that a state has up to eighteen months from the presidential disaster declaration to submit a grant application, and FEMA makes the award within a month of application submission);

prioritizes grant applications before submitting them to FEMA.[68] FEMA generally follows state-determined priorities in approving grants, which require state or local cost-sharing.[69] Once an individual property owner agrees to sell, the state or local agency administering the buyout program demolishes or relocates any structures and maintains the property as open space, restoring its function as a floodplain.[70] Funding for the program is set by statute as a percentage of federal disaster assistance made available under the presidential disaster declaration.[71]

Buyouts have been relatively few in number and tend to involve a small number of properties rather than entire communities.[72] Between 1989 and 2017, FEMA funded 43,633 buyouts[73]—a fraction of the millions of projected buyouts that climate change will necessitate.[74] After Hurricane Sandy damaged an estimated 300,000 housing units in 2012, New Jersey's Blue Acres program spent approximately $190 million to acquire more than 700

U.S. GOV'T ACCOUNTABILITY OFF., GAO-22-106037, FLOOD MITIGATION: ACTIONS NEEDED TO IMPROVE USE OF FEMA PROPERTY ACQUISITIONS 11 (2022) (noting that between 1989 and 2018, approximately "90 percent of all property acquisitions and 82 percent of all acquisition funding" derived from the Hazard Mitigation Grant Program).

[68] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 15 (explaining the HMGP grant application process).

[69] *See* OFF. INSPECTOR GENERAL, *supra* note 66, at 2 (explaining the structure of cost-sharing); *see also* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 12–15 (discussing the property acquisition process). State or local governments are sometimes unable to come up with the 25% share of buyout funding that FEMA requires. *E.g.*, 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/9HVF-MNEZ] ("The other 25 percent has to come from the state, county, or locality—one of the many barriers that inhibits communities from considering buyouts in the first place.").

[70] *See* Mach et al., *supra* note 66, at 1 (discussing the process of managed retreat); *see also* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 4 (detailing that acquired properties are restored as open space).

[71] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 6 n.17 (indicating the amount of funds available for the program).

[72] *See* Mach et al., *supra* note 66, at 6 (noting that buyouts have not been widely used at this point).

[73] *Id.* at 2.

[74] *See* Siders, *supra* note 64, at 216 (highlighting that an "estimated 49 million housing units in shoreline counties" could require buyouts).

damaged properties.[75] In New York, an estimated 10%–15% of eligible homeowners participated in a similar voluntary buyout program following Hurricane Sandy.[76]

The slow pace of buyout programs has hampered their effectiveness.[77] On average, buyouts are completed 5.7 years after the disaster that precipitated the buyout.[78] Many homeowners who experience severe disaster-related damage and express initial interest in a buyout instead sell to private buyers, or make repairs and stay in their homes.[79] This attrition in buyout program participation reflects a fundamental tension between agencies' primary objective of using buyouts to mitigate future hazards and homeowners' expectations that buyouts should facilitate recovery from a present disaster.[80]

Psychological, institutional, and practical barriers to managed retreat have also suppressed buyout numbers.[81] People often have strong attachments to their homes and communities and enjoy

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[75] Katie Spidalieri, Isabelle Smith & Jessica Grannis, *State of New Jersey: Blue Acres Buyout Program*, at 2, *in* GEO. CLIMATE CTR., MANAGING THE RETREAT FROM RISING SEAS: LESSONS AND TOOLS FROM 17 CASE STUDIES (2020).

[76] *See* Hayat & Moore, *supra* note 57, at 10343 ("For New York, it is estimated that only 10-15% of the 11,300 qualifying homeowners will ultimately accept a buyout offer.").

[77] *See id.* ("Another reason for the low participation rates in buyout programs is that the process of completing a buyout transaction is agonizingly slow."); Siders, *supra* note 64, at 220 (stating that "FEMA-funded buyouts take too long"); Rob Moore, *As Climate Risks Worsen, U.S. Flood Buyouts Fail to Meet the Need*, YALE ENV'T 360 (Jan. 23, 2020), https://e360.yale.edu/features/as-climate-risks-worsen-u.s.-flood-buyouts-fail-to-meet-the-need [https://perma.cc/ETF8-ZKVW] (noting that FEMA is "struggling to provide buyouts in a timely fashion").

[78] *See* Mach et al., *supra* note 66, at 4 ("The average FEMA HMGP buyout project takes 5.7 years from the start of the associated disaster event to project closeout . . . ."). However, deed transfer and demolition often occur sooner. *See* HORN, *supra* note 66, at 2 (reporting that most FEMA acquisitions occur within two years).

[79] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 21 (stating that "[h]omeowners may drop out of a project . . . because they decided to stay in the home after making repairs or because they decided to sell it privately instead"); Sherri Brokopp Binder, Alex Greer & Elyse Zavar, *Home Buyouts: A Tool for Mitigation or Recovery?*, 29 DISASTER PREVENTION & MGMT. 497, 505 (2020) (noting concerns that "homeowners would use available funding . . . to repair and rebuild their homes, making them less willing to relocate . . . [or] they would sell their homes to private investors who would redevelop and repopulate the properties").

[80] *See* Binder, Greer & Zavar, *supra* note 79, at 506 (discussing attrition from buyout program implemented after flooding caused by Hurricane Harvey).

[81] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 21–26 (describing various challenges posed by managed retreat); Siders, *supra* note 64, at 218–21 (analyzing psychological, institutional, and practical barriers to managed retreat).

living near the water or in forested areas, notwithstanding the risks.[82] Further, property owners tend to prefer less disruptive adaptation strategies, such as elevating homes to counter rising seas, constructing seawalls to fend off erosion, or creating defensible space to ward off wildfire.[83] However, such strategies are generally of limited effect in addressing climate hazards.[84] Homeowners may not fully recognize those hazards, which subsidized insurance programs further obscure.[85] Compounding the problem, local governments tend to promote property development instead of retreat. Local governments rely heavily on property tax revenues and worry that buyouts will negatively impact housing stock.[86] Similarly, politicians typically opt for short-term fixes rather than systemic changes that better address long-term risks.[87] In addition, community advocates may oppose buyouts because they can displace or fragment disadvantaged communities.[88] For various

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[82] *See* Siders, *supra* note 64, at 218 ("Place attachment can become central to personal identity and strongly influence decision making."); Lawrence et al., *supra* note 64, at 68 ("Many people have strong ties to their place of residence: it is, after all, their home.").

[83] Siders, *supra* note 64, at 217; Lawrence et al., *supra* note 64, at 69 (noting that one constraint to managed retreat is "[c]ommunity preference for protection over retreat").

[84] *See* Siders, *supra* note 64, at 217 (highlighting risks associated with resistance measures).

[85] *See id.* at 219 ("People rely on disaster costs to be paid from federal coffers, and there are few incentives for state or local governments to reduce how much disasters cost.").

[86] *See id.* (noting that "because many local governments rely on property taxes for revenue, they have little financial incentive to pursue retreat"); Linda Shi, Tisha Joseph Holmes & William Butler, *Climate Change Is a Fiscal Disaster for Local Governments—Our Study Shows How It's Testing Communities in Florida*, CONVERSATION (Oct. 5, 2023, 8:33 AM), https://theconversation.com/climate-change-is-a-fiscal-disaster-for-local-governments-our-study-shows-how-its-testing-communities-in-florida-211482 [https://perma.cc/D4R5-GFUL] ("Local reliance on property taxes also can discourage cities from steering development out of flood zones, which is essential for reducing long-term risks."); HORN, *supra* note 66, at 2 (stating that "[b]uyouts may reduce state and local income from property taxes [and] reduce housing stock").

[87] *See* Lawrence et al., *supra* note 64, at 70 (addressing "political incentives for elected officials to favour short-term visible fixes, rather than more prudent long-term strategies"); *see also* Anne C. Mulkern, *Managed Retreat: Unpopular, Expensive and Not Going Away*, E&E NEWS (Nov. 5, 2021, 6:55 AM), https://www.eenews.net/articles/managed-retreat-unpopular-expensive-and-not-going-away/ [https://perma.cc/T7JB-A9N4] (discussing vetoed legislation in California that would have allowed cities to borrow money to buy homes threatened by sea level rise and rent them out until they become uninhabitable).

[88] *See* HORN, *supra* note 66, at 2 (noting that buyouts may "create fears that low-income communities are being removed, or fragment communities through resident displacement"). Buyouts so far have tended to take place in wealthier counties, but among lower-income

stakeholders, managed retreat seems too disruptive, costly, and complicated.[89]

Thus far, voluntary buyouts and other managed retreat efforts have had little impact on the number of people living in flood-prone and fire-prone areas.[90] In the North Carolina floodplain, for example, more than ten new residences were built for each property buyout between 1996 and 2017.[91] Finding ways to augment managed retreat efforts is critical.

II. PURPOSES OF GOVERNMENT-BACKED INSURANCE

Government-backed insurance programs have expanded in response to the withdrawal of private insurers from climate-vulnerable areas.[92] These programs' primary objective is ensuring insurance availability and affordability, and their secondary objectives include encouraging the purchase of coverage and promoting actuarial soundness.

A. AVAILABILITY/AFFORDABILITY

Where private insurance is unavailable or unaffordable, government-backed insurance has played an important role in facilitating homeowner access to insurance at affordable rates.[93]

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neighborhoods within those counties, suggesting that poorer counties have less resources to apply for buyout programs. *See* Gout, *supra* note 69 (stating that FEMA-funded buyouts have primarily occurred in lower-income neighborhoods of wealthy, urban counties).

[89] *See* Siders, *supra* note 64, at 219 (addressing the negative implications of managed retreat for local governments, property developers, and homeowners); Lawrence et al., *supra* note 64, at 67 ("Aside from the physical difficulties, complex governance, legal, planning, distributional, cultural, place-attachment and funding issues arise."). FEMA offers funding to states to conduct buyouts, but state or local governments are sometimes unable to come up with the 25% share of buyout funding that FEMA requires. Gout, *supra* note 69.

[90] *See* Miyuki Hino et al., *Growing Safely or Building Risk?: Floodplain Management in North Carolina*, 90 J. AM. PLAN. ASS'N 50, 50–51 (2024) (noting gradual increases in the population exposed to risk of flood and other "extreme weather events").

[91] *See id.* at 50 (describing the results of a statewide study evaluating the relationship between flood risk management efforts and development outcomes).

[92] *See* Kousky, *supra* note 8, at 156 (noting the overall expansion of most state insurance programs).

[93] *See id.* at 156–57, 161 (describing circumstances in which states have "step[ped] in" to offer coverage and how state insurance programs can "encourage the return of the private market after hard periods").

Ideally, public insurance functions as a stopgap, offering coverage temporarily until private insurance markets recover.[94] Governments can encourage private insurers to return to the market by permitting them to charge actuarially sound rates.[95]

However, the persistence and growth of public insurance programs for climate-related harms indicate that public insurance is assuming a broader, more permanent role. Dramatic hikes in private insurance rates and the departure of prominent insurers from major property insurance markets reflect the difficulty of insuring catastrophic climate risks.[96] Ultimately, the extreme and correlated nature of these risks, combined with regulators' reluctance to allow actuarially sound rates, may lead insurers to conclude that catastrophic climate risks are uninsurable.[97] Such circumstances can transform public insurance from being an occasional and last resort to the only available option.

Regulation of private insurance rates may result in unavailability if insurers are not allowed to charge enough to make a profit. Yet insurance may be unaffordable if regulators allow insurers to charge actuarially sound rates.[98] Public insurance programs complement rate regulation by promoting affordability and availability through subsidized rates.[99] Because mortgage lenders require borrowers to secure insurance coverage, insurance subsidies are especially critical for middle-income and working-

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[94] *See id.* at 161 ("If the decrease in supply is temporary, state programs can be a useful stopgap . . . . ensur[ing] availability in a hard market and then let[ting] the private sector step back in as the market softens.").

[95] *See id.* ("States can help encourage the return of the private market after hard periods by allowing insurers to charge rates that are risk based and keeping residual market mechanisms as a place of last resort by charging higher prices and enforcing strict eligibility requirements.").

[96] *See supra* section I.A (describing how increases in catastrophic risks and the populations exposed to those risks have led to higher private insurance rates and the withdrawal of certain private insurers from such markets).

[97] *See* Ben-Shahar & Logue, *supra* note 9, at 584 (suggesting that insurance industry analysts' assertions of "insufficient insuring capacity" may be consistent with the size and correlation of weather calamities, or the difficulty of predicting and pricing such calamities according to "prevailing actuarial practices").

[98] *See* Kousky, *supra* note 8, at 155 ("[T]he required high rates often cause outcry in catastrophe-prone regions, especially in good years.")

[99] *See id.* at 161–62 (describing the role of state insurance programs in not only ensuring the availability of coverage, but also making coverage "affordable" by subsidizing insurance costs).

class people to purchase or remain in their homes.[100] Fairness concerns also motivate efforts to keep premiums affordable, as sudden rate increases can upset homeowner expectations.[101]

B. COVERAGE

Even when disaster insurance is available, property owners sometimes decline to purchase such coverage.[102] Individuals may underestimate the likelihood of suffering a catastrophe or simply lack information about the probability and magnitude of catastrophic risks.[103] In addition, individuals may find premiums to be too expensive or assume they will receive disaster assistance if

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[100] *See* Ben-Shahar & Logue, *supra* note 9, at 578, 584–85 (calling insurance subsidies "necessary" for lower middle income and working class people who "might otherwise be unable . . . to buy or remain in their homes" and noting that many people "simply could not afford such coverage, especially in areas where disaster risk is large and thus costly to insure"); ELLIOTT, *supra* note 52, at 178 ("Decreasing insurance availability and affordability will be punitive for property owners in the middle and working class who need mortgage approval to acquire assets and build wealth over time.").

[101] *See* NAT'L RSCH. COUNCIL, AFFORDABILITY OF NATIONAL FLOOD INSURANCE PROGRAM PREMIUMS: REPORT 1, at 18 (2015), http://nap.nationalacademies.org/21709 (discussing fairness as a factor in setting reasonable premiums under the NFIP). It should be noted, however, that insurance subsidies transfer risks from property owners to other policyholders or the government and often benefit wealthier homeowners disproportionately. *See* Ben-Shahar & Logue, *supra* note 9, at 579 (finding "surprisingly strong positive correlation between subsidy and wealth" in Florida's Citizens insurance program); DIANE P. HORN, CONG. RSCH. SERV., IF10988, A BRIEF INTRODUCTION TO THE NATIONAL FLOOD INSURANCE PROGRAM 1 (2024) ("The NFIP . . . allow[s] for the transfer of some of the financial risk of property owners to the federal government . . . ."); Kousky, *supra* note 8, at 162, 169 (describing how state programs "make insurance affordable" by passing off some costs onto private insurance companies and other in-state policyholders or taxpayers).

[102] *See* Kousky, *Role of Disaster Insurance*, *supra* note 35, at 406 (explaining that "absent compulsory disaster insurance or greatly subsidized premiums, take-up rates tend to be very low for disaster insurance"); GOV'T ACCOUNTABILITY OFF., *supra* note 49, at 22, 43 (noting that despite the NFIP, property owners sometimes forego coverage even when it is mandatory).

[103] *See* Kunreuther, *supra* note 10, at 744–45 (reporting that over time more flood insurance policies are canceled because purchasers "perceive the likelihood of a disaster[] as so low that they do not pay attention to its potential consequences and conclude they do not need insurance"); Kousky, *Role of Disaster Insurance*, *supra* note 35, at 406 (explaining that low take-up could be due to individuals having difficulty making risk-related decisions, lacking full information regarding insurance and risk, and unwillingness to pay price); Ben-Shahar & Logue, *supra* note 9, at 584 (noting that "purchasers of weather insurance do not fully appreciate the risk of severe weather and the cost of potential damage, and are therefore unwilling to pay actuarially fair premiums that insurers require to provide coverage").

catastrophe strikes.[104] A further purpose of public insurance programs is to encourage property owners to secure coverage, notwithstanding these barriers.[105] Insurance coverage protects property owners from financial risks, facilitates recovery from disaster, and reduces the need for public disaster assistance.[106] Coverage priced under actuarially sound principles can also foster homeowners' understanding of catastrophic risk.[107]

C. ACTUARIAL SOUNDNESS

Indeed, actuarial soundness is an internal objective of most insurance programs.[108] Under this principle, premiums should reflect the expected value of future claims, based on risk assessments, as well as the costs of writing policies and processing claims.[109] For insurers, actuarially sound premiums promote financial viability.[110] For insureds, actuarially sound premiums communicate information about risk and ways to mitigate it.[111] And

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[104] *See* Kousky, *Role of Disaster Insurance*, *supra* note 35, at 406 (explaining that anecdotal evidence shows that price is a large barrier to purchase of disaster insurance); U.S GOV'T ACCOUNTABILITY OFF., GAO-17-425, FLOOD INSURANCE: COMPREHENSIVE REFORM COULD IMPROVE SOLVENCY AND ENHANCE RESILIENCE 2 (2017) (noting that consumers may choose not to purchase flood insurance because they overestimate the adequacy of federal assistance they would receive). *But see* Kousky, *Role of Disaster Insurance*, *supra* note 35, at 40635 (finding that there is "little empirical evidence" that the "expectation of federal disaster aid discourages ex ante risk management").

[105] *See* NAT'L RSCH. COUNCIL, *supra* note 101, at 5 (noting that "[a] long-standing objective of the NFIP has been to increase purchases of flood insurance policies").

[106] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 104, at 6, 43 (explaining the purpose of flood insurance).

[107] *See* NAT'L RSCH. COUNCIL, *supra* note 101, at 31 (noting that the NFIP risk-based insurance premiums would help homeowners understand flood risks by ensuring that occupants bore the cost of living in places that had appreciable flood risks).

[108] *See* KEVIN BINGHAM, MARK CHARRON, GERALD KIRSCHNER, RICHARD MESSICK & SHAMA SABADE, DELOITTE CONSULTING LLP, THE ROLE OF ACTUARIAL SOUNDNESS IN THE NATIONAL FLOOD INSURANCE PROGRAM, at iv (2006) (discussing the necessity of actuarial science to the insurance industry)*; see also* Kunreuther, *supra* note 10, at 750 (describing the "guiding principle" that "premiums should reflect risk").

[109] *See* NAT'L RSCH. COUNCIL, *supra* note 101, at 36 (discussing insurance's inner structure).

[110] *See* BINGHAM ET AL., *supra* note 108, at iv (recommending that the NFIP eventually "move toward actuarial soundness in order to be fiscally sound and attain self-sufficiency").

[111] *See* Kunreuther, *supra* note 10, at 750 (noting that insurance premiums should be risk-based to provide individuals with accurate indications of the hazards they face and the opportunity to mitigate damages); Ben-Shahar & Logue, *supra* note 9, at 576 (noting that

for society, actuarial soundness promotes efficient behavior through risk-based premiums.[112] Differentiated premiums steer development toward areas less vulnerable to climate disasters and influence individual choices regarding where to live and what safety investments to make.[113] In areas of extreme climate vulnerability, the unavailability of insurance could halt development.

The 2012 NFIP reforms were intended to move the program toward actuarial soundness.[114] However, the public outcry against those reforms, followed by their swift rollback, underscores the NFIP's predominant purpose of ensuring insurance availability and accessibility, not actuarial soundness.[115] Notably, these objectives need not be entirely at odds with each other. Public insurance programs can incorporate risk-based premiums to promote actuarial soundness, as well as maintain affordability through means-tested vouchers, mitigation grants, and other mechanisms.[116]

"premium differentials help not only to internalize cost but also to inform insureds of risks that they otherwise might not be aware of or fully appreciate").

[112] *See* Ben-Shahar & Logue, *supra* note 9, at 576 (complaining that "[i]nsurance policies for extreme weather-related losses . . . are not priced to reflect the real risk"); *id.* at 613 (stating that underpriced flood insurance appears to be partly responsible for high levels of floodplain development). *But see* Kousky, *Role of Disaster Insurance*, *supra* note 35, at 413 (suggesting a lack of empirical evidence for the common assertion that availability of flood insurance under NFIP has driven floodplain development).

[113] *See* Ben-Shahar & Logue, *supra* note 9, at 575–76, 581 (noting disaster insurance internalizes the costs that otherwise may have been externalized and that differentiated premiums make it more difficult to forgo safety investments).

[114] *See* NAT'L RSCH. COUNCIL, *supra* note 101, at 4 ("[The 2012 NFIP reforms] sought to remove constraints on the NFIP's ability to follow actuarial pricing principles.").

[115] *See id.* at 15–17 (reporting that "[a]s the provisions of BW 2012 began to be implemented, there was an outcry from some parts of the nation" and "[a]s a result of the vigorously stated concerns about affordability, Congress passed the Homeowner Flood Insurance Affordability Act of 2014").

[116] *See id.* at 8 (describing how the NFIP can maintain both actuarial soundness and affordability using "means tested mitigation grants, mitigation loans, vouchers, and encouragement of higher premium deductibles"); Kunreuther, *supra* note 10, at 753–54 ("One way to maintain risk-based premiums while at the same time addressing issues of affordability is to offer means-tested vouchers that cover part of the cost of insurance."). Replacing government-run insurance with need-based subsidies to pay for private insurance premiums might be more efficient and equitable—but politically impossible. *See* Ben-Shahar & Logue, *supra* note 9, at 626 (characterizing such a proposal as "naïve").

III. LINKING PUBLIC INSURANCE WITH CLIMATE RETREAT

A. WHAT'S AHEAD

As climate risks become impossible to ignore, private insurers will seek higher premiums to reflect those risks.[117] State regulators will allow some rate hikes but ultimately will draw a line to maintain affordability.[118] Regardless of growing catastrophic risks, politicians "prefer to keep rates artificially low, constituents happy and their tax bases intact."[119] If premiums are inadequate to satisfy principles of actuarial soundness, insurers may spread potential liability across different markets and lines of coverage, rely more heavily on reinsurance to transfer risks, or simply conclude that they cannot insure catastrophic climate risks.[120]

Governments can explore policy options for countering the withdrawal of private insurers from the market for climate-related risks. The federal government might offer favorable tax treatment of catastrophe bonds or facilitate insurers' accrual of cash reserves.[121] State governments might establish reinsurance programs, allow insurers to incorporate projected climate risks in setting their rates, or hinder insurers from avoiding climate-vulnerable areas.[122]

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[117] *See, e.g.*, Ken Sweet, *Homeowners Face Rising Insurance Rates as Climate Change Makes Wildfires, Storms More Common*, AP NEWS (Sep. 20, 2023, 12:20 PM), https://apnews.com/article/homeowners-insurance-climate-change-wildfire-disasters-9c7129881f12ec478386e4b47c1acbbc [https://perma.cc/Q44M-QG2H] ("California, Florida and Louisiana, which are prone to wildfires and damaging storms and flooding, are likely to see the most dramatic increases in premiums.").

[118] *See* Michael Copley, Rebecca Hersher & Nathan Rott, *How Climate Change Could Cause a Home Insurance Meltdown*, NPR (July 22, 2023, 6:00 AM), https://www.npr.org/2023/07/22/1186540332/how-climate-change-could-cause-a-home-insurance-meltdown [https://perma.cc/7U94-9PPF] ("State agencies regulate the insurance industry, and they are trying to keep rates low for residents, even as weather gets more extreme from global warming.").

[119] *Climate Change Is Coming for America's Property Market*, *supra* note 42.

[120] *See* GOV'T ACCOUNTABILITY OFF., *supra* note 12, at 12 (describing how insurers diversify risk for catastrophic losses).

[121] *See id.* at 41–43 (exploring different policy options for federal involvement in catastrophic insurance).

[122] *See, e.g.*, *supra* text accompanying note 28; CAL. DEPT. INS., TRIAL BY FIRE: MANAGING CLIMATE RISKS FACING INSURERS IN THE GOLDEN STATE 53 (2018) (listing policy proposals from the California Department of Insurance addressing climate risks).

Nonetheless, the withdrawal of private insurers from climate-vulnerable regions will create a vacuum that governments will try to fill.[123] The alternative of leaving homeowners in vulnerable areas with no insurance coverage whatsoever could preclude home ownership for anyone needing a mortgage to buy a home.[124] Housing values and property tax revenues would fall, and local governments would struggle to provide essential services.[125] The bursting of the "climate change housing price bubble" could even precipitate a systemic financial crisis.[126] Federal and state governments will not stand idly by as such a scenario unfolds.[127] As in the past, they will likely offer insurance in an attempt to limit dislocation, fend off property devaluation, and bolster the tax base.[128]

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[123] ELLIOTT, *supra* note 52, at 177 (noting that with respect to climate-related risks, policymakers "have a track record of taking measures that preserve the affordability of private insurance for consumers, while at the same time maintaining the desirability of at-risk property for private insurers and reinsurers").

[124] *See* Cho, *supra* note 1 ("If properties become uninsurable because of climate risks, mortgage providers could refuse loans as well.").

[125] *See id.* ("Home values would fall as a result as people begin to move away. Once they do, the tax base would decline, negatively affecting school systems, fire departments, and other municipal services.").

[126] ELLIOTT, *supra* note 52, at 174; *see also* Masters, *supra* note 60 (describing climate change as "creating a housing bubble that puts the U.S. financial system at risk").

[127] *See* ELLIOTT, *supra* note 52, at 176 (observing that "policymakers intervene in ways that blunt the force of property devaluations").

[128] *See* Kayyem, *supra* note 16 ("The upshot of American disaster-relief policy as a whole has been to extend the status quo, no matter what."); *see also* Abrahm Lustgarten, *How Climate Migration Will Reshape America*, N.Y. TIMES MAG. (Sept. 15, 2020), https://www.nytimes.com/interactive/2020/09/15/magazine/climate-crisis-migration-america.html (suggesting that reliance on FAIR plans in the face of climate change "amount[s] to a sort of shell game, meant to keep growth going even when other obvious signs and scientific research suggest that it should stop"). "Climate gentrification" represents another possible scenario. As rising insurance rates force people of more modest means from climate-vulnerable areas, the wealthy might replace them, transforming working class communities into "luxury part-time hangouts." ELLIOTT, *supra* note 52, at 178; *see also* Sarah Stodola, *If Hurricane Rebuilding Is Only Affordable for the Wealthy, This Is the Florida You Get*, N.Y. TIMES (Sept. 27, 2023), https://www.nytimes.com/2023/09/27/opinion/hurricane-ian-recovery-florida.html (noting that even with insurance payouts, homeowners may opt to sell their property to developers of second homes or high-end resorts rather than rebuild to meet more stringent building code standards).

B. PROPOSAL

Though not an ideal mechanism for spreading climate risks, government-backed insurance programs will play a significant role in insuring homeowners against climate catastrophes. Such programs should advance fundamental public insurance objectives of promoting availability, affordability, and widespread coverage. They should also further climate-specific policy goals of steering development away from climate-vulnerable areas and facilitating managed retreat.

Linking public insurance programs with managed retreat efforts would advance all of these objectives. Specifically, public insurance coverage for properties in climate-vulnerable areas should be made contingent on an agreement by insureds to enter into buyouts if property damage exceeds a predetermined threshold. The threshold could be set at 50%, 75%, or some other percentage of the value of the insured structure. If property damage exceeds the threshold, the government would have a choice. It could pay out under the insurance policies, which typically provide replacement cost value or actual cash value.[129] Alternatively, the government could purchase the property at the insurance payout amount or 90% of pre-disaster fair market value, whichever is greater. In deciding whether to exercise its option to acquire the property, the government should consider funding availability, the value of the property as open space, the presence of other buyout properties nearby, the history of repetitive loss, and other relevant factors. The government should promptly inform homeowners whether it is purchasing a property, ideally within two or three months after the damage occurs.

This proposal assumes that governments, to promote insurance accessibility and availability, will offer disaster insurance to homeowners in climate-vulnerable areas. Linking such insurance

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[129] FED. EMERGENCY MGMT. AGENCY, NATIONAL FLOOD INSURANCE PROGRAM SUMMARY OF COVERAGE 7 (2023) (explaining that standard NFIP policies pay for replacement cost value (RCV) or actual cash value (RCV minus depreciation), up to coverage limits); *What to Expect After Reporting Your Claim*, CITIZENS PROP. INS. CORP., https://www.citizensfla.com/documents/20702/460724/Claim+Report+Process+Brochure.pdf/e694b24a-77e2-4dc0-9a99-9b5502a6ae08 [https://perma.cc/98QA-LQ9R] (noting that policies may cover ACV or RCV).

coverage to buyouts can break the disaster-rebuild cycle and overcome resistance to managed retreat.

Specific features of the proposal should be crafted to further its political, economic, and practical feasibility. A relatively high threshold for buyouts would reassure homeowners that buyouts would not occur absent substantial damage. Setting buyout prices at 90% of pre-disaster fair market value would reduce the cost of buyouts to taxpayers while offering a relatively fair return to property owners. Requiring buyout prices to be at least as high as insurance payouts would also foster fairness and avoid skewing buyout decisions based on costs alone. To limit overall program costs and subsidies to the wealthy, a ceiling could be established on individual buyout prices.

Efficient implementation of buyouts is essential to disaster recovery. Using pre-disaster fair market value and projected insurance payouts would facilitate relatively prompt buyout cost determinations.[130] At the same time, governments would decide whether to make buyouts only after damage occurs. Waiting to make this decision would allow those implementing the program to account for current information on factors such as funding availability and the concentration of damaged properties.

A series of examples illustrates how this proposal might play out. For simplicity's sake, each example assumes implementation of the proposal through the NFIP; state-backed insurance programs could implement the proposal as well.

- Owner A owns a $400,000 property consisting of a home worth $300,000 and land worth $100,000. Owner A purchases a flood insurance policy providing the maximum available coverage of $250,000 (actual cash value). Flooding completely destroys the home. The federal government would then choose between making an insurance payout of $250,000 or acquiring the property for $360,000. (The $360,000 acquisition price reflects 90% of pre-disaster value and is greater than the $250,000 payout amount.)

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[130] *Cf.* Adler et al., *supra* note 49, at 10323 (explaining that a "discounts for buyouts" proposal of guaranteed buyouts based on pre-disaster appraised values would "address[] barriers posed by long lag times and uncertainty in the existing buyout program").

- If the threshold for exercising the option to purchase is set at 50% and flooding damages Owner A's home by 50%, the government would choose between making an insurance payout of $150,000 (half of the actual cash value of the home) or acquiring the property for $360,000.
- Owner B owns a $200,000 property consisting of a home worth $150,000 and land worth $50,000. Owner B purchases a flood insurance policy providing $200,000 in replacement value coverage. Flooding completely destroys the home. Assume that the home would cost $220,000 to replace. The federal government would then choose between making an insurance payout at the coverage ceiling of $200,000 or acquiring the property for $200,000. (The $200,000 acquisition price reflects the insurance payout amount, which is greater than $180,000—*i.e.*, 90% of the $200,000 pre-disaster value.)
- If the threshold for exercising the option to purchase is set at 50% and flooding damages Owner B's home by 50%, the government would choose between paying out replacement value coverage of $100,000 (assuming again that replacement cost exceeds actual cash value) or acquiring the property for $180,000 (i.e., 90% of the $200,000 pre-disaster value).
- Owner C owns a $1,000,000 property consisting of a home worth $900,000 and land worth $100,000. Owner C purchases a flood insurance policy providing the maximum available coverage of $250,000 (replacement cost value). Flooding completely destroys the home. The federal government would then choose between making an insurance payout of $250,000 or acquiring the property for $900,000. (The $900,000 acquisition price reflects 90% of pre-disaster fair market value and is greater than the $250,000 insurance payout amount.)
- If the threshold for exercising the option to purchase is set at 50% and flooding damages Owner C's home by 50%, the government would choose between making an insurance payout of $250,000 (the maximum

> available coverage) or acquiring the property for $900,000.

This proposal would not mandate immediate retreat from climate-vulnerable areas. Neither would it involve the often controversial exercise of eminent domain by the government, nor would it deprive homeowners of property without just compensation.[131] Instead, it would make the most of disaster-caused damage by compelling retreat after a disaster has occurred. Nonetheless, the proposal would be more coercive than an alternative suggestion that the NFIP offer insureds a discounted premium in return for a mandatory future buyout.[132] Under the instant proposal, insureds in climate-vulnerable areas would be able to obtain coverage only if they agree to a potential future buyout. The buyout would occur only if the damage threshold was met and the government chose to exercise the buyout option. Homeowners with mortgages in such areas would have little choice but to purchase government-backed insurance with the proposed buyout condition in order to remain. Their only alternatives would be to obtain private coverage, if available, or to sell. If a homeowner decided to sell, buyers would either forego a mortgage or take out a mortgage along with insurance coverage containing the buyout condition.

Mandatory buyouts of public insurance policyholders would address several of the obstacles encountered by voluntary buyout programs. Speeding up the buyout process is essential to facilitating

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[131] In 2015, the U.S. Army Corps of Engineers required municipalities to agree to potentially use eminent domain to relocate households in order to receive flood mitigation funding. *See* Fanilla Cheng, *Is Compulsory Managed Retreat Our Future?*, NEW AM. (Nov. 17, 2021), https://www.newamerica.org/future-land-housing/briefs/is-compulsory-managed-retreat-our-future/ [https://perma.cc/H62V-USHB] (suggesting that "eminent domain may be too politically untenable to be adopted on a wide scale" to bring about managed retreat).

[132] *See* Rob Moore*, Seeking Higher Ground: How to Break the Cycle of Repeated Flooding with Climate-Smart Flood Insurance Reforms*, NAT. RES. DEF. COUNCIL (Jul. 2017), https://www.nrdc.org/sites/default/files/climate-smart-flood-insurance-ib.pdf [https://perma.cc/GJ2L-EE5F] (proposing flood insurance reform); Hayat & Moore, *supra* note 57, at 10344–45 (describing an NFIP-specific proposal whose threshold criteria for property owner eligibility would include only properties valued at less than the maximum insurable value, $250,000 structural value, and having a benefit-cost ratio greater than one, and eligibility would be limited to low- and middle-income residents of highly vulnerable areas); *id.* at 10347 (stating a buyout agreement could be enforced through a judicial order for specific performance and repayment of the premium discounts received for entering the agreement).

disaster recovery.[133] Mandatory buyouts would avoid the delays involved in recruiting homeowners, as well as the attrition of participants as buyout projects are delayed.[134] Aligning buyouts with the claim payment process could further reduce delays.[135] Moreover, program administrators could undertake buyouts in a systematic manner. This would limit or avoid the creation of a checkerboard pattern of land ownership in which government-acquired properties are interspersed with still-occupied, privately owned parcels.[136] Checkerboarding presents challenges for public managers of acquired areas as floodplains or wildfire buffers and also for communities obliged to provide services and infrastructure for those who remain.[137]

Although government actors would retain discretion over whether to purchase an insured property after a disaster, contingency planning would enable them to act promptly once disaster strikes. Homeowners are less resistant to buyouts shortly after a disaster "when they are keenly aware of their . . . risk and before they repair damage to their homes."[138] Conducting outreach before a disaster can increase insureds' acceptance of subsequent buyout decisions and pique interest among homeowners who lack insurance policies. In their planning processes, governments should identify priority areas where properties or entire neighborhoods are most at risk, such as areas that have experienced repeated catastrophic damage. Targeting properties with a history of such damage will shore up the financial viability of public insurance programs. Governments should also consider historical, cultural, and environmental resources that buyouts may affect. State involvement in the prioritization process is essential for speeding up the buyout process, particularly if states must apply for federal

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[133] *See* Moore, *supra* note 77 (discussing the importance of implementing buyouts as soon as possible after flooding); *see generally* Binder, Greer & Zavar, *supra* note 79, at 504–06 (describing key contributing factors, including timing, and their implications on buyouts).

[134] *See* U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 26 (describing the challenges associated with voluntary participation).

[135] *See id.* at 41 (discussing how the proposed provision of acquisition funding through the NFIP could expedite the acquisition process).

[136] *See* HORN, *supra* note 66, at 2 (describing the creation of the "checkerboard" effect); U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 41 (noting homeowners not enrolled in public insurance might contribute to continued checkerboarding).

[137] *See* U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 67 at 26 (discussing checkerboarding).

[138] *Id.* at 21.

funds. Federal support for local buyout planning processes can further boost community readiness to implement buyouts and promote equitable access to buyout programs.[139] Governments can also establish trust funds, line up borrowing authority, or set up other financial mechanisms to facilitate rapid buyouts after a disaster.[140]

IV. CONCLUSION

The instant proposal will not fully address the challenges of promoting insurance availability and affordability, encouraging insurance uptake, or effectuating managed retreat. The proposal's reach is limited, leaving renters and uninsured homeowners outside its scope. Governments will not always have the resources needed to undertake buyouts. Individuals who are bought out will not be made whole. In addition, post-disaster buyouts may encounter resistance from homeowners, and governments may struggle to make buyout decisions in the wake of catastrophic damage. Furthermore, displaced homeowners may struggle to find replacement housing they can afford.[141]

Pre-disaster buyouts, in contrast, can facilitate climate retreat in a more orderly manner. Such programs should be expanded, as should reforms to improve planning and building codes to encourage more resilient development.[142] The instant proposal nevertheless would complement ongoing and future adaptation efforts by putting in place a mechanism for mandatory retreat. Such an approach would take advantage of the likely continued expansion of public insurance programs and make the most of disaster-caused damage.

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[139] *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. & SCIS. 481, 485 (2021) (stating that federal and state funding could be used to support local buyout program administrators).

[140] States generally have borrowing authority to pay for capital expenses but not operating expenses. *See* CTR. ON BUDGET & POL'Y PRIORITIES, POLICY BASICS: STATE AND LOCAL BORROWING 1 (2018) ("Almost all state and local bond debt is long-term debt incurred to pay for capital expenditures . . . not to cover operating expenses.").

[141] GOV'T ACCOUNTABILITY OFF., *supra* note 67, at 24–25 (discussing challenges regarding affordability and replacement housing supply).

[142] *See* CAL. DEP'T INS., *supra* note 122, at 47, 50 (stating that improving planning and building code could reduce climate risk vulnerability).