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ROLLING BACK THE TIDE: TOWARD AN INDIVIDUAL MANDATE FOR FLOOD INSURANCE

Alexander Lemann[*]

The National Flood Insurance Program is in flux—and under attack. On March 13, 2014, Congress passed the Homeowner Flood Insurance Affordability Act, delaying and dismantling many of the reforms it had put in place just twenty months earlier, when it passed the Biggert-Waters Flood Insurance Reform Act of 2012. Today, flood insurance is both a critical part of the country's approach to dealing with the rising flood threat posed by climate change and a beleaguered and perpetually broke symbol of governmental ineptitude, leading to calls for its elimination. By providing federally-subsidized flood insurance, critics argue, the National Flood Insurance Program has insulated flood victims from the risks they face, encouraged development in flood prone areas and, paradoxically, increased the country's overall exposure to flooding.

This account, however, gives short shrift to the Program's sophistication and ability to discourage development in flood plains. In fact, the Program's woes can largely be traced to two intertwined flaws: its weak mechanism for requiring coverage and its hesitation to charge premiums that reflect the actual risk policyholders face. In this Article, I argue that establishing an individual mandate for flood insurance, which would require all property owners in flood-prone areas to maintain policies, would do much to solve these problems and make the National Flood Insurance Program a powerful tool in the ongoing effort to mitigate our growing flood risk. By mandating coverage and charging rates that reflect the risk faced by each

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property, the National Flood Insurance Program could strike the difficult balance between providing a safety net to flood victims and discouraging flood-prone development, a goal that has eluded the Program over the course of its forty-six year history.

I. INTRODUCTION

Flooding is the most common and most costly natural disaster in the United States, and, thanks largely to climate change, the toll it takes is increasing.[1] Over the coming century, coastal areas will be inundated by rising seas, pounded by powerful storms, and left exposed by the erosion of wetlands and barrier islands. Inland areas, particularly near rivers, will face increased flooding too, as patterns of rainfall shift towards more frequent and intense downpours. The United States is not, following the example of the Dutch, likely to find comfort in a massive engineering solution. The flood risks we face are too massive, and too geographically diffuse, to be mitigated by a series of dams and levees, however expensive and complex.[2] To most who have examined the problem, the solution that presents itself is retreat: we must begin to discourage new development in flood-prone areas and encourage the abandonment of the riskiest places.[3]

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1. Patricia E. Salkin, *40th Anniversary of the Quiet Revolution in Zoning and Land Use Regulation: Article: The Quiet Revolution and Federalism: Into the Future*, 45 J. MARSHALL L. REV. 253, 272 (2012) (citing Rawle O. King, *Federal Flood Insurance: The Repetitive Loss Problem* (Cong. Research Serv., RL 32972, 2005), *available at* http://www.fas.org/sgp/crs/misc/RL32972.pdf)). Between 1981 and 2011, flooding caused an *average* of nearly $8 billion in property and crop damage per year, and killed 4,586 people. U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 80 (Jerry M. Melillo, Terese Richmond, & Gary W. Yohe, eds., 2014), *available at* nca2014.globalchange.gov [hereinafter *Third National Climate Assessment*].

2. *See, e.g.*, William J. Broad, *In Europe, High-Tech Flood Control, with Nature's Help*, N.Y. TIMES, Sept. 6, 2005, at F1. Because half the Netherlands, including both Amsterdam and Rotterdam, lies below sea level, the enormous cost of the country's sophisticated levee system is often expressed as a portion of the gross national product. The geographic diversity of the flood risks confronting the U.S. prevents this kind of project, or this kind of thinking.

3. *See, e.g.*, Robert R.M. Verchick & Lynsey R. Johnson, *When Retreat is the Best Option: Flood Insurance After Biggert-Waters and Other Climate Change Puzzles*, 47 J. MARSHALL L. REV. 695, 696 (2014); Michael Kimmelman, *Going*

The National Flood Insurance Program ("NFIP") has the potential to play a significant role in furthering this project. The NFIP has long been controversial.[4] Since its creation in 1968, it has provided flood insurance, a market private companies had abandoned due to the enormous, difficult to quantify, and highly correlated risks involved. Premiums under the NFIP are in many cases "subsidized" in the sense that they do not reflect the true measure of risk most policyholders actually face. While the NFIP has made great strides in evaluating flood risks and encouraging the adoption of mitigation measures, its implied subsidy has been a near-constant source of controversy and has plunged what was supposed to be a self-sustaining program deep into debt.[5]

Congress has frequently set out to reform the NFIP, usually with lackluster results. In July 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act, a major step forward in eliminating subsidized rates and giving the program a chance at self-sufficiency.[6] As Biggert-Waters took effect and policyholders received notice that their premiums would increase, however, a political backlash began to grow against it, resulting in the repeal of certain key provisions by the Homeowner Flood Insurance Affordability Act of 2014, which

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with the Flow, N.Y. TIMES, Feb 17, 2013, at AR1 (describing a proposal by Governor Cuomo to pay residents of flood-prone areas to relocate); Lisa A. St. Amand, *Sea Level Rise and Coastal Wetlands: Opportunities for a Peaceful Migration*, 19 B.C. ENVTL. AFF. L. REV. 1, 3 (1991) (describing a strategy of "institutionalizing the presumption that humanly constructed structures will have to give way to migrating wetlands as sea level rises"); NEW YORK STATE SEA LEVEL RISE TASK FORCE, REPORT TO THE LEGISLATURE 60 (2010), *available at* www.dec.ny.gov/energy/67778.html (calling for reducing "incentives that increase or perpetuate development in high-risk locations" and creating "incentives for sustainable adaptation planning," particularly "adaptive transition of infrastructure and development over time").

4. *See generally* Scott Gabriel Knowles & Howard C. Kunreuther, *Troubled Waters: The National Flood Insurance Program in Historical Perspective*, 26 J. POLICY HISTORY 327 (2014).

5. The NFIP has the statutory authority to borrow from the U.S. Treasury, up to a certain limit. *See infra* note 113. The program always succeeded in paying back what it owed, until 2005, when is suffered $19 billion in losses, more than the total losses of the program since its inception. NATIONAL RESEARCH COUNCIL, REDUCING COASTAL RISKS ON THE EAST AND GULF COASTS 41 (National Academies Press 2014). As of 2013, its debt stood at $30.4 billion. *Id*.

6. *See* Knowles & Kunreuther, *supra* note 4, at 328-29; Verchick & Johnson, *supra* note 3, at 708-09, 714-15.

was signed into law on March 21st.[7] These changes illustrate the tension between providing a safety net in the form of affordable, available flood insurance and the danger inherent in socializing the costs of floods, which leads to a false sense of security and encourages risky development.

A major hindrance in the NFIP's efforts to strike the appropriate balance between adequately insuring policyholders against risk and providing a significant subsidy to flood-prone development has been the lack of an individual mandate. The program's "lender mandate," both underinclusive and underenforced, leaves a shocking number of homeowners without flood insurance. It also leaves the NFIP vulnerable to the "adverse selection" problem, a classic plague of insurance markets in which those who face the lowest risk are the most likely to opt-out of buying insurance.[8] Requiring that all property owners in flood-prone areas maintain flood insurance policies would help both the NFIP and the urgent national project of mitigating our exposure to flood risk in several important ways. First, it would strengthen the NFIP financially, helping end its crushing debt. Second, it would close some of the holes in its social safety net, providing compensation to victims of floods predictably and quickly, and relieving pressure on Congress to pass massive aid packages in the wake of major disasters. Finally, and perhaps most crucially, an individual mandate for flood insurance would discourage development in flood-prone areas by monetizing and annualizing the flood risk property owners face, helping overcome the tangle of cognitive biases that prevent us from thinking about unlikely yet catastrophic risks in rational ways.

Part II of this Article presents the problem of our national exposure to flood risk, which is set to increase dramatically over the course of the next century. Part III describes the NFIP in some detail and examines the ways in which the program has helped quantify, mitigate, and insure against flood risks. Part III also explores Congress's recent efforts to reform the NFIP, and the reasons some observers have called for its outright elimination. In Part IV, I present a proposed solution, an individual mandate for flood insurance, and explore the ways in which mandated coverage and actuarial rates would together help save the NFIP from the moral

7. Pub. L. No. 113-89, 128 Stat. 1020.

8. *See infra* Part III.F.

hazard problem that has haunted it since before it was created. With these reforms, I argue, the NFIP could be a powerful yet flexible tool in discouraging flood-prone settlement, imposing on property owners costs that, unlike the chance of a catastrophic flood, would be impossible to ignore.

II. SEA LEVEL RISE, FLOODING, AND FEDERAL POLICY

Our changing climate will increase the flood risk we face in a few important ways. First, the melting of polar ice caps and thermal expansion of sea water will increase the volume of water in the world's oceans, leading to global increases in sea level. The rise in sea level is sometimes estimated at between one and four feet over the next century.[9] The bottom end of that range, one foot of sea level rise, is expected even without any contribution from melting ice sheets in Greenland and Antarctica.[10] Rising sea levels are worse than a "flood" in the usual sense of the word: they lead to "inundation," a permanent retreat of the coastline as rising seas forever submerge low-lying coastal areas.[11] Moreover, the rate of sea level rise is increasing. Since 1992, the rate of sea level rise has been roughly twice the rate observed over the last century.

The intrusion of salty ocean water also destroys coastal wetlands, eroding vast areas of land that form a buffer zone between populated areas and the ocean.[12] Southern Louisiana, for instance, has lost 1,880 square miles of coastal land since the 1930s, effectively bringing New Orleans closer to the Gulf of Mexico while dismantling its natural defenses against storm surges.[13] The intensity, frequency, and duration of hurricanes in the North Atlantic have increased since the early 1980s, and they are expected to continue increasing as the

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9. *Third National Climate Assessment*, *supra* note 1, at 44. Global sea level has already risen about eight inches since the late nineteenth century. *Id.*

10. *Id.* at 45.

11. MATTHEW J.P. COOPER, MICHAEL D. BEEVERS, AND MICHAEL OPPENHEIMER, FUTURE SEA LEVEL RISE AND THE NEW JERSEY COAST: ASSESSING POTENTIAL IMPACTS AND OPPORTUNITIES 7 (Science, Technology and Environmental Policy Program, Woodrow Wilson School of Public and International Affairs, 2005).

12. *See Third National Climate Assessment*, *supra* note 1, at 582.

13. *Id.* at 402 (citing BRADY R. COUVILLION, ET AL., LAND AREA CHANGE IN COASTAL LOUISIANA FROM 1932 TO 2010: U.S. GEOLOGICAL SURVEY SCIENTIFIC INVESTIGATIONS MAP 3164, *available at* pubs.usgs.gov/sim/3164/).

climate warms.[14] The magnitude of the problem presented by rising seas is staggering. In the United States alone, nearly 5 million people live within four feet of the local high-tide level, and a sea level rise of only two feet would inundate more than $1 trillion worth of property.[15]

Nor are inland areas immune. Climate change has already begun to worsen the frequency and severity of heavy rains. The U.S. Global Change Research Program's Third National Climate Assessment listed among its "key messages" the fact that "heavy downpours" are increasing, evidence of "a clear national trend toward a greater amount of precipitation being concentrated in very heavy events."[16] The Northeast, in particular, saw a 71 percent increase in the amount of precipitation falling in the heaviest 1 percent of storms from 1958 to 2012.[17] These trends are projected to continue, even in regions where overall precipitation levels are expected to decrease as a result of a warming climate.[18] These changes in rainfall are projected to lead, unsurprisingly, to an increase in flooding along many rivers.[19]

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14. *Third National Climate Assessment*, supra note 1, at 20, 41; COOPER, ET AL., *supra* note 11, at 9. While the *National Climate Assessment* notes that there is disagreement among the models as to whether the strongest hurricanes are likely to become more frequent, it warns that the models are "in better agreement when projecting changes in hurricane precipitation – almost all existing studies project greater rainfall rates in hurricanes in a warmer climate, with projected increases of about 20% averaged near the center of hurricanes." *Third National Climate Assessment*, *supra* note 1, at 42.

15. *Third National Climate Assessment, supra* note 1, at 45, 589. The migration of the U.S. population into coastal areas over the course of the second half of the twentieth century is one reason the costs of flooding from coastal storms has increased so dramatically. *See* Knowles & Kunreuther, *supra* note 4, at 327-28. Since 1950, Florida, for instance, has experienced a 579 percent increase in population, the highest in the nation, and has risen from the twentieth most populous state to the fourth. *Id.*

16. *Third National Climate Assessment, supra* note 1, at 9.

17. *Id*.

18. *Id.* at 37; Robert R.M. Verchick & Abby Hall, *Adapting to Climate Change While Planning for Disaster: Footholds, Rope Lines, and the Iowa Floods*, 2011 BYU L. REV. 2203, 2206 (citing U.S. GLOBAL CLIMATE CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 32 (2009), *available at* http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf.

19. *Third National Climate Assessment*, *supra* note 1, at 40. The report notes, however, that the precise relationship between increasing downpours and river

The central irony of our efforts to help alleviate the risk of flooding over the past century is that we have actually made the problem worse. The goals of disaster policy are twofold: first, preparing for disasters before they strike so as to mitigate the harms they cause, and second, helping people recover after a disaster occurs. These goals are naturally in tension. By attempting to insulate certain populations from disasters, we have dramatically increased the number of people exposed to them. Experts call this the "safe development paradox." By making development "safe," flood control structures actually make people less safe, by encouraging development in risky areas.[20]

New Orleans provides a stark example. The neighborhood known as New Orleans East was basically a vast swamp until the late 60's.[21] When Hurricane Betsy provided the impetus for the construction of a massive new levee system around New Orleans, the levees were also designed to encircle then-uninhabited New Orleans East.[22] A cost-benefit analysis conducted by the Office of the Comptroller of the Currency in 1976 attributed only twenty-one percent of the benefit of the new levee system to protecting the city of New Orleans as it then existed. Seventy-nine percent of the project's benefits were to come from new development in previously empty areas that would now be protected.[23] Indeed, New Orleans East rapidly became a popular suburb.[24] In the days after Hurricane Katrina, parts of the area were more than ten feet underwater.[25]

Not only do flood control devices encourage settlement in areas of high flood risk by creating an illusion of safety, they can also

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flooding is not known, since the largest increases in heavy rains may occur during the summer and fall, when the ground tends to be drier and more capable of absorbing rainwater. *Id.*

20. *See* Raymond J. Burby, *Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas*, 604 ANNALS OF THE AM. ACAD. OF POL. & SOC. SCI. 171, 173 (2006).

21. *Id*. at 175.

22. *Id*. at 174 – 75.

23. *Id*.

24. 22,000 new housing units were built in the area between 1970 and 2000. *Id*. at 176.

25. CHRISTINE F. ANDERSON, THE NEW ORLEANS HURRICANE PROTECTION SYSTEM: WHAT WENT WRONG AND WHY 32 (2007) (report by American Society of Civil Engineers Hurricane Katrina External Review Panel).

exacerbate the risk itself by increasing the severity of the floods they are supposed to prevent. Wetlands and coastal vegetation act as natural "sponges" that help soak up storm surges.[26] When those areas are "hardscaped" by development, they no longer perform this function.[27] Development along sandy beaches poses similar risks. When left alone, beaches and barrier islands migrate as the action of waves and storms picks up and redistributes sand.[28] Towns with buildings along beaches have often sought to prevent the loss of the land on which they sit—and its attendant flooding—by building concrete seawalls, but scientists now know that seawalls only accelerate the erosion of beaches.[29] The only viable option for keeping such places intact as they currently exist consists of periodic "beach replenishment," which involves dredging sand from the ocean and depositing it along beaches to form large man-made dunes. The Army Corps of Engineers has erected a twenty-two foot high protective rampart made of sand to protect one such town, Harvey Cedars, New Jersey, population 337. The project cost twenty-six million dollars, of which the town itself paid barely one percent.[30]

Many dams, particularly on western rivers, were constructed solely to prevent floods.[31] While they often serve that function well for the

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26. John Rudolf, et al., *Hurricane Sandy Damage Amplified by Breakneck Development of Coast*, The Huffington Post, Nov. 12, 2012, http://www.huffingtonpost.com/2012/11/12/hurricane-sandy-damage_n_2114525.html.

27. *Id.*

28. John Seabrook, *The Beach Builders: Can the Jersey Shore be Saved?*, NEW YORKER, July 22, 2013, at 42, 45; Robert J. Nicholls & Anny Cazenave, *Sea-level Rise and its Impact on Coastal Zones*, 328 SCIENCE 1517 (2010).

29. *See generally* ORRIN H. PILKEY & KATHARINE DIXON WHEELER, THE CORPS AND THE SHORE (Island Press 1998).

30. The federal government paid about 65% of the cost, while the State paid just under 35%. Seabrook, *supra* note 28, at 44. Ironically, takings clause jurisprudence requires that local governments pay homeowners along the beach — precisely those who benefit most from the protection of new sand dunes — for the privilege of blocking the views from the first floors of their homes. *See* Kate Zernike, *Court Sides with Town on Price of Views Lost to Dune*, N.Y. TIMES, July 9, 2013, at A16 (reporting New Jersey appellate court's decision that value of flood protection must be considered in determining just compensation for homeowners' loss of view).

31. *See* Oklahoma v. Atkinson Co., 313 U.S. 508, 517-26 (1941) (describing history of reservoirs as flood control measures on tributaries of the Mississippi);

communities immediately downstream, they also trap silt that would otherwise flow out to the ocean and contribute to the creation of new land along the coast. Such dams thus deprive coastal communities of their naturally-recharging shields against storm surges. Indeed, levee systems along rivers that prevent seasonal flooding have this same effect. One study estimated that without the yearly replenishment of silt that seasonal flooding would naturally provide, coastal Louisiana was "sinking beneath the Gulf of Mexico at a rate of more than forty square miles a year."[32] Moreover, by eliminating smaller floodplains upstream, levees exacerbate flooding downstream, as floodwaters are shunted along instead of "naturally spread," "filtered into underground aquifers," and "released slowly, as from a sponge."[33]

These examples support the growing realization that it will not be possible to engineer our way out of this problem. Unlike the Netherlands, the United States does not have the option of building a single magic-bullet flood control system that is capable of mitigating the flood risk we face. This kind of solution is neither politically nor practically possible, as the United States faces risks that are more dispersed and yet also more intense than those faced by the Netherlands.[34] In the wake of Hurricane Sandy, much attention was drawn to the longstanding question of whether New York City should, like London, construct flood control gates at the entrances to its harbor to block an incoming storm surge. Such a project, it has been estimated, would cost between $10 and $17 billion, and would only protect areas inside the gates.[35] Outside that zone, a solid barrier would actually make flooding worse, by as much as 20 percent.[36] For now, the idea of a flood gate straddling New York harbor has been shelved, and the response to Hurricane Sandy has instead focused on more prosaic measures, like raising the subway's

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MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 182-94 (1993) (same).

32. Oliver A. Houck, *Rising Water: The National Food Insurance Program and Louisiana,* 60 TUL. L. REV. 61, 124-25 (1985); *see also* MARC REISNER, CADILLAC DESERT 475 (1993).

33. Houck*, supra* note 32, at 81 (citing Belt, *The 1979 Flood and Man's Constriction of the Mississippi River*, 189 SCIENCE 681 (1975)).

34. *See supra* note 2.

35. Mireya Navarro*, Weighing Sea Barriers as Protection for New York*, N.Y. TIMES, Nov. 8, 2012, at A21.

36. *Id.*

ventilation grates and paying homeowners to move out of vulnerable homes.[37]

With rising seas creating an ever-increasing risk of catastrophic flooding (and even permanent inundation) and large-scale engineering simply incapable of immunizing coastal residents from flood risk, many have concluded that encouraging a retreat from the coast must become a major component of efforts to prepare for floods.[38] After Hurricane Sandy, an op-ed in the New York Times suggested that the way to "end the cycle of repairing or rebuilding properties in the path of future storms" was to "begin to retreat from the ocean's edge."[39] Where simply moving inland isn't feasible or is too costly, homes, businesses, and infrastructure will need to be made resilient to flooding to one degree or another. Policymakers at all levels have begun to recognize that our response to escalating flood risk will necessarily include both relocation and adaptation, implemented on a largely individual level.[40] Indeed, a 2014 study by the National Research Council found that "[s]trategies that reduce the consequences of coastal storms, such as hazard zoning, building elevation, land purchase, and setbacks" (which the study referred to collectively as "consequence reduction strategies") have cost-benefit ratios as high as 1:8, and yet have been neglected by policymakers. Between 2004 and 2012, the study noted, federal funds set aside for these strategies represented only five percent of the funds allocated to disaster relief.[41]

Accepting the inevitability of permanent changes to our nation's coastline leads to a stark realization. If the chief goal of our national disaster policy is to minimize the risk we face by moving people away from the coasts, then virtually all our efforts to mitigate flood

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37. *See* Kia Gregory & Marc Santora, *Bloomberg Outlines $20 Billion Storm Protection Plan*, N.Y. TIMES, Jun. 12, 2013, at A1. Conspicuously absent from Mayor Bloomberg's plan was a barrier across the harbor. *See* NEW YORK CITY SPECIAL INITIATIVE FOR REBUILDING AND RESILIENCY, A STRONGER, MORE RESILIENT NEW YORK 49, June 11, 2013, *available at* http://www.nyc.gov/html/sirr/html/report/report.shtml (discussing downsides of two possible harbor barrier proposals).

38. *See supra* note 3.

39. Orrin H. Pilkey, Op-Ed., *We Need to Retreat from the Beach*, N.Y. TIMES, Nov. 15, 2012, at A35.

40. *See, e.g.*, *Third National Climate Assessment*, *supra* note 1, at 594-95; NYC SPECIAL INITIATIVE FOR REBUILDING AND RESILIENCY, *supra* note 37, at 69 et seq.

41. NATIONAL RESEARCH COUNCIL, *supra* note 5, at 5, 87-89.

risk begin to seem counterproductive. Every dollar spent helping prevent floods, helping people survive floods, or even helping communities rebuild after floods represents a quantum of risk that is being borne by the federal government and not by people living in areas of flood risk. Such efforts have provided a massive subsidy to coastal development, a policy that is literally disastrous.

Some modern critics, surveying this history, have come to view the National Flood Insurance Program as a prime culprit. By providing flood insurance at below-market rates to homeowners in flood-prone areas, the NFIP subsidizes coastal development, helping externalize the risks homeowners face and thus disguising their magnitude. This subsidy encourages coastal development by effectively making it more affordable, putting more people in harm's way and thus increasing the magnitude of the damage wrought by floods. This observation has been a theme of the many and repeated calls for the elimination of the program.[42] On the other hand, even those who insist most fervently that coastal development is unsustainable do not suggest that *all* coastal development be abandoned.[43] Living on the coast to be close to a job might well make sense for some people, and there are many instances in which the benefits people derive from living in such areas outweigh the risks, regardless of how those risks are allocated.

The risk of flooding is a type of externality, one that has historically been spread onto taxpayers as a whole. In order to achieve what could be called an efficient outcome (coastal development occurring only when its benefits outweigh its risks), property owners, as "least cost avoiders," must be forced to bear the costs of the flooding to which they expose themselves.[44] As

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42. *See, e.g.,* Judith Kildow & Jason Scorse, *End Federal Flood Insurance*, N.Y. Times, Nov. 28, 2012, at A31; Charlene Luke & Aviva Abramovsky, *Managing the Next Deluge: A Tax System Approach to Flood Insurance*, 18 Conn. Ins. L.J. 1, 42 et seq. (2011) (proposing replacement of the NFIP with universal social safety net for flood losses paid for by tax withholding); *see also* Knowles & Kunreuther, *supra* note 4, at 343 (characterizing the moral hazard argument as a "key critique that has plagued the NFIP").

43. *See* Pilkey, *supra* note 39 (arguing that "surviving buildings and new construction should be elevated on pilings" and that "some buildings should be moved back from the beach").

44. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules and Inalienability: One view of the Cathedral*, 85 HARV. L. REV. 1089, 1096-97 (1972). It is at least arguable that owners of flood prone property are not always

discussed in more detail below, spreading this risk prevents this decision from being made, as it masks the costs of flooding from those who have some ability to decide whether they live in a flood zone or not. There is a simpler way of putting the problem. Artificially low flood insurance premiums essentially trick people into thinking that living on the coast is safer than it is. Research has shown that people are bad at evaluating risks that are highly unlikely and yet catastrophic if they occur.[45] Flood insurance premiums serve a messaging function: someone has quantified the risk you face for you, and this figure approximates its gravity. When that figure is artificially low, people are being told that their situation is less risky than it actually is.

The NFIP is a preexisting mechanism for compelling homeowners in areas of high flood risk to recognize and bear some of the cost of the risk they face, even if its premiums have been set at artificially low levels. Far from being ripe for outright abolition, the NFIP actually has the potential to be a potent weapon in the struggle to limit and discourage development that puts people in the way of floods. The NFIP has always had features that were aimed at minimizing flood risk. Its ineffectiveness, and its historical status as an ill-advised subsidy to coastal development, could be corrected by implementing an individual mandate requiring all homeowners in flood zones to participate in the program. With this modification, and with premiums adjusted upwards, the NFIP could play a crucial role in performing the delicate balancing act required by disaster preparation. The program would thus be able to achieve its goal of

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properly considered the least cost avoiders when it comes to their exposure to flood risk. For instance, it may not be reasonable to expect that someone who was born and raised in a flood-prone neighborhood of New Orleans has the means to relocate out of concern for the area's flood risk, even if that person is a homeowner. *See infra* note 185. Moreover, because flood risks are highly correlated, focusing on an individual property owner may provide a misleading answer to the question of who is able to prevent the harm of flooding at least cost. In the case of many communities, it may well be that government can mitigate the risk of flooding through engineering at less cost than the individuals within that community would incur, collectively, by moving out or paying for their homes to be elevated. A representative government should, however, be responsive to the flood risk of its people (as manifested in the collective burden of flood insurance premiums), and there are reasons to think that mandating coverage would increase this responsiveness. *See infra* notes 209-211.

45. *See infra* Part IV.D.1.

helping protect people from crippling losses while at the same time discouraging irresponsible development.

III. THE NATIONAL FLOOD INSURANCE PROGRAM

The roots of the NFIP can be traced back at least as far as 1927, when the Mississippi River burst its banks and flooded approximately 26,000 square miles, killing more than 200 people, displacing 600,000 others, and causing roughly $5 billion in property damage.[46] Insurers, who at the time provided flood insurance, suffered staggering losses in the 1927 floods due to a characteristic of flood risk called "correlation."[47] When risks are not correlated, the risk of a harm befalling a particular individual (or policyholder) is unrelated to the risk that another individual will suffer the same harm. For instance, the risk that anyone will suffer a heart attack in a given day is not correlated with the risk that his or her neighbor will suffer a heart attack that same day. Flood risk is quite different. As insurers learned in 1927, the risk that a particular home will be destroyed by a flood is highly correlated with the risk that neighboring homes – and thousands of others – will be destroyed at the same time. Thus, even though there might be only a one percent chance of a flood in a given year, when that flood occurs it is likely to affect thousands of properties at the same time.[48] This feature of

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46. Houck, *supra* note 32, at n.98. The flood is estimated to have cost $364,533,154 in damage in 1927 dollars. *Id*. The figure above was updated using the inflation calculator on the website of the Bureau of Labor Statistics. *See CPI Inflation Calculator,* BUREAU OF LABOR STATISTICS, www.bls.gov/data/inflation_calculator.htm. *See also* Adam F. Scales, *A Nation of Policyholders: Governmental and Market Failure in Flood Insurance*, 26 MISS. C. L. REV. 3, 7 (2006).

47. Luke & Abramovsky, *supra* note 42, at 23-24 (citing DAVID A. MOSS, WHEN ALL ELSE FAILS: GOVERNMENT AS THE ULTIMATE RISK MANAGER 262 (2002)); *see also* James Ming Chen*, Correlation, Coverage, and Catastrophe: The Contours of Financial Preparedness for Disaster*, 26 FORDHAM ENVTL. L. REV. 56, 65-66 (2014) (referring to correlation as "the most insidious factor undermining the financial integrity of private insurance for catastrophic risk").

48. *Id*.; Scales, *supra* note 46, at 10-11. Luke and Abramovsky note that private insurance companies would address this problem by charging "front-loaded premiums to create a large reserve in case the low probability event occurred early in the life of the risk pool," which has the effect of making flood insurance less attractive to individuals. *Supra* note 42, at 23-24. Another tactic insurance companies have adopted to combat highly correlated risks is establishing an array

flood risk is what makes it so difficult for private insurers to spread the risk evenly across their policyholders, and a major part of the reason private insurers had simply stopped providing flood insurance by the mid 20th century.[49]

Into this void stepped the federal government. The move toward the creation of a national flood insurance program proceeded in fits and starts until 1968, when Congress passed the National Flood Insurance Act, which created the NFIP.[50] The NFIP is administered by the Federal Emergency Management Agency ("FEMA") and provides flood insurance to those who live in certain areas. Among the program's complex provisions are features that encourage those who participate to reduce their flood risk and that link the amount of premiums property owners must pay to the riskiness of their situations. Crucially, however, most NFIP policyholders pay subsidized rates, and the program lacks an individual mandate. These two factors contribute to the program's financial troubles and hamper its ability to reduce the nation's flood risk, even while it helps insulate individuals from the financial costs of particular floods.

This Part describes the NFIP in some detail and examines the various ways in which its provisions have fallen short of their intended goals. Parts III.A, III.B, and III.C discuss the three key features of the NFIP: flood risk evaluation, mitigation, and

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of subsidiaries that issue policies in narrow geographic areas. When large losses occur, these subsidiaries are simply allowed to go bankrupt without affecting the exposure of the parent corporation. Scales, *supra* note 46, at 11. This practice has, needless to say, been controversial. *Id*. at n.29.

49. Between 1952 and 1955, after massive floods in Kansas and Missouri, the insurance industry published a series of reports concluding that flood insurance could not be successfully underwritten by private insurers. AM. INS. ASS'N., STUDIES OF FLOODS AND FLOOD DAMAGE 1952-1955, at 3 (1956), *cited in*, Wesse & Ooms, *The National Flood Insurance Program—Did the Insurance Industry Drop Out?*, 31 CHARTERED PROPERTY AND CASUALTY UNDERWRITERS J. 187 n.5 (1978).

50. 42 U.S.C. § 4011 et seq. (2012); Pub. L. No. 90-448, 82 Stat. 572. Hurricane Betsy struck the Gulf Coast in 1965, prompting Congress to pass the Southeast Hurricane Disaster Relief Act of 1965, Pub. L. No. 89-339, 79 Stat. 1301, which directed the Department of Housing and Urban Development to prepare a report on the feasibility of a comprehensive approach to compensation for flood victims. The resulting report, which was submitted to Congress in 1966, recommended the creation of a national flood insurance program, among other measures. Houck, *supra* note 32, at 68-69.

insurance.[51] Part III.D discusses the NFIP's longstanding lack of financial soundness. Part III.E reviews recent efforts to reform the NFIP, particularly the Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowner Flood Insurance Affordability Act of 2014. Finally, Part III.F examines the limited mechanism by which the NFIP requires certain property owners to purchase flood insurance and the failures in this mechanism. As will be shown, the NFIP is a tool for shifting risk, one that, if properly calibrated, could do much to help encourage more rational development in flood-prone areas while also aiding the swift and predictable recovery from disasters.

A. Evaluating the Risk

The NFIP first tasks FEMA with evaluating the flood risk faced by essentially every property in the country.[52] This involves a two step analysis. First, FEMA identifies what it calls "special flood hazard areas," which are areas that have a 1 percent chance of experiencing a flood in any given year.[53] This statistical construct – the flood with a 1 percent chance of occurring in any given year, also known as a "100-year flood" – is the foundation on which much of the NFIP is built.[54] Special flood hazard areas, or "100-year flood zones," are

51. The NFIP has been tweaked by legislation many times over the course of its existence. The details of this evolution are outside the scope of this Article, and are well chronicled elsewhere. *See, e.g.*, Knowles & Kunreuther, *supra* note 4; HOWARD KUNREUTHER & DOUGLAS C. DACY, THE ECONOMICS OF NATURAL DISASTERS 259 (1969); Beth Davison, Note: *How Quickly We Forget: The National Flood Insurance Program and Floodplain Development in Missouri*, 19 WASH. U. J. L. & POL'Y 365, 366-69 (2005).

52. 42 U.S.C. § 4101. Reliably predicting the flood risk of an individual property requires complex hydrological studies and was another key barrier private insurers faced in attempting to provide flood insurance. Edward T. Pasterick, *The National Flood Insurance Program, in* PAYING THE PRICE: THE STATUS AND ROLE OF INSURANCE AGAINST NATURAL DISASTERS IN THE UNITED STATES 125, 128 (Howard Kunreuther and Richard Roth, eds. 1998); Scales, *supra* note 46, at 8.

53. 44 C.F.R. § 59.1 (2014); Houck, *supra* note 32, at 74. FEMA refers to floods that have a 1 percent chance of occurring in a given year as "base floods," and to the height of the water during such floods as the "base flood elevation." 44 C.F.R. § 59.1.

54. The term "100-year flood" is somewhat misleading, as it is often mistakenly assumed that such a flood will occur only once in each hundred year period. Because floods do not occur at regular intervals, however, the occurrence of one 100-year flood says nothing about when the next will arrive. *See* Scales, *supra*

depicted on a rough preliminary map called a "Flood Hazard Boundary Map," which typically shows only the outline of the special flood hazard area, marked as "Zone A."[55] At this stage, with only the Flood Hazard Boundary Map complete, only limited "first layer coverage" is available.[56] The idea is that a participating community will proceed from this "emergency phase" to the "regular program" as rapidly as possible (which has, indeed, already happened for the vast majority of participating communities).[57]

Before a community can transition from the emergency program to the regular program, FEMA must complete a "flood insurance rate study," a comprehensive examination of the area's flood risks that results in a "flood insurance rate map," commonly referred to as a "FIRM."[58] In addition to showing areas of minimal, moderate, and special flood hazard, a FIRM provides detailed information about how severe flooding is likely to be in the event of a 100-year flood. The series of symbols used by FEMA to mark areas of varying hazard give some sense of how complex a FIRM can be. Within Zone A (areas that will be inundated during a 100-year flood), a FIRM can use the symbol A0 to denote an area of "shallow water depths and/or unpredictable flow paths between 1 and 3 feet" and the symbols A1 to A30 to denote the depth of the water in an area at "base flood elevation," which is the water level during a 100-year flood.[59] The maps also take into account flood protection systems that might keep an otherwise flood-prone area dry: the code A99 denotes an "area of special flood hazard where enough progress has been made on a protective system . . . to consider it complete for

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note 46, at 9, n.23 ("What the average person actually understands . . . is that once there has already been such a flood in his area, he is safe for the next ninety-nine years."). FEMA now prefers to express the chance of flooding by telling homeowners in 100-year flood zones that they face a twenty-five percent chance of flooding at least once over the course of a 30-year mortgage. *See* FloodSmart.gov: The official site of the NFIP, *About the National Flood Insurance Program: When insurance is required*, www.floodsmart.gov/pages/about/when_insurance_is_required.jsp; *see also* National Research Council, *supra* note 5, at 21 (noting that "[i]n recent years the trend has been to call this the '1 percent chance' event, to emphasize that the event could happen at any time").

55. 44 C.F.R. § 64.3(a)(2); Houck, *supra* note 32, at 74.

56. 44 C.F.R. §§ 59.1, 59.3.

57. *Id*. at § 59.3; Houck, *supra* note 32, at 76.

58. 44 C.F.R. §§ 59.1, 60.3(e).

59. *Id*. § 64.3(a)(1).

insurance rating purposes," while the code AR denotes an area of flood hazard resulting from "the decertification of a previously accredited flood protection system that is determined to be in the process of being restored to provide base flood protection."[60] A FIRM may also use codes ranging from V or V0 to V30 to denote "coastal high hazard areas" where flood waters might have velocity (giving them much more destructive potential).[61] Finally, there are special codes to indicate varying degrees of mudslide risk, erosion hazards, and "undetermined but possible flood hazards."[62] In essence, the key feature of the FIRM is that it depicts the difference between a given property's surface elevation and the base flood elevation, and thus gives a sense of how many feet of water will cover the property in the event of a statistically average 100-year flood.[63]

B. Mitigating the Risk

Participation in the NFIP is community-based: flood insurance is only available to those who live in communities that participate in the program.[64] The program thus holds out an incentive to communities to participate in offering flood insurance to their residents, but it also carries a threat. In non-participating communities, federal grants,

60. *Id.* Notably, however, there is no provision by which a FIRM (or, as a result, an individual's flood insurance premiums) can take into account the likelihood that a levee will fail. *See* Burby, *supra* note 20, at 177. New Orleans is far from the only example. In 1987, FEMA estimated that approximately one-third of all flood disasters involved levee overtopping or failure. *Id.* at 176.

61. *Id.*

62. *Id.*

63. Houck, *supra* note 32, at 77, n.84. One study conducted by FEMA estimated that roughly 3 percent of the U.S. population lives in coastal special flood hazard areas. Mark Crowell, et al., *An Estimate of the U.S. Population Living in 100-Year Coastal Flood Hazard Areas*, 26 J. OF COASTAL RESEARCH 201, 201 (2010).

64. 42 U.S.C. § 4102(c). The regulations define "community" as any political subdivision "with the authority to adopt and enforce flood plain management regulations for the areas within its jurisdiction." 44 C.F.R. § 59.1. Individuals in non-participating communities must rely on post-hoc government assistance or on private flood insurance, which is virtually non-existent. Luke & Abramovsky, *supra* note 42, at 8 n.31. This is a rare situation: "most flood-prone communities that have elected not to participate are communities whose areas of serious flood risk are either very small or have few if any structures." Pasterick, *supra* note 52, at 129.

disaster relief, and mortgage insurance are not available for properties located in special flood hazard areas.[65] To participate, a community must enact certain measures to help mitigate its flood risk.[66] The requirements vary depending on whether a community is flood-prone, mudslide prone, subject to flood-related erosion, or some combination of these, and also increase in stages depending on the level of detail at which the area's flood risks have been mapped.[67] Most importantly, the regulations require that a community pre-approve new construction in flood-prone areas and that it do so only where the new development is designed to be flood-resistant in various ways.[68] For instance, new construction in 100-year flood zones must be "designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure" due to flooding and must be built with materials that are "resistant to flood damage."[69] When a FIRM shows an area's base flood elevation, all new construction and "substantial improvements of residential structures" that occurs in special flood hazard areas after the FIRM is issued must be elevated above the base flood level.[70] The NFIP also requires that communities avoid development that will have the effect of worsening floods, such as development that would block stormwater drainage.[71] Such are the requirements that apply to all communities that participate in the NFIP.

Just how effective these requirements have been in helping to mitigate flood damage is a matter of debate. Their most notable

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65. 42 U.S.C. § 4106; Luke & Abramovsky, *supra* note 42, at 8.

66. 42 U.S.C. §§ 4022, 4102(c); 44 C.F.R. § 59.22(a)(3).

67. 44 C.F.R. §§ 60.2, 60.3.

68. *Id.* § 60.3(a)(3).

69. *Id.* § 60.3(b).

70. *Id.* § 60.3(c)(2). The regulations define "substantial improvements" to mean improvements that cost 50 percent or more of the structure's market value (when a structure has been damaged by flooding, its market value is its pre-flood value). *Id.* § 59.1. During the rebuilding of New Orleans in the wake of Hurricane Katrina, many residents thus found that determinations of the amount of damage their homes had suffered carried dramatic consequences. Homes that were more than 50% damaged were required to be elevated above the base flood level, sometimes ten or fifteen feet above street level. *See, e.g.*, Renee Peck, *Elevated Houses Making a Mark on Post-Katrina New Orleans Landscape*, NEW ORLEANS TIMES-PICAYUNE, Aug. 23, 2008; Adam Nossiter, *Rebuilding New Orleans, One Appeal at a Time*, N.Y. TIMES, Feb. 5, 2006.

71. 44 C.F.R. § 60.3(c)(10).

feature is that they are entirely decentralized. Rather than simply imposing regulations on everyone, the NFIP places the burden of establishing and enforcing these rules on individual communities. These requirements are in turn enforced by FEMA, which conducts reviews periodically to ensure that participating communities are in compliance.[72] If FEMA determines that a community is not complying, it can be placed on probation and ultimately suspended from the program, which renders the community's residents ineligible for coverage.[73] FEMA performs site visits, however, at a relatively small percentage of participating communities each year, and most of the information it receives about compliance comes in the form of annual reports from the communities themselves.[74]

Studies conducted over the years by academics, consultants, and FEMA itself have suggested that these enforcement mechanisms are not terribly effective. One survey of a variety of communities in Louisiana revealed numerous instances in which communities fell far short of meeting their regulatory mandate.[75] In one flood-prone community, local officials made "little or no effort to enforce the [NFIP's] flood plain management and elevation requirements."[76] In another, a FEMA investigation concluded that local officials exhibited a "total lack of understanding" of the NFIP's requirements.[77] Another study attributed a quarter of the $16 billion in losses caused by Hurricane Andrew in 1992 to Dade County's failure to enforce its own building code.[78] The federal government has sued such communities, on the theory that their flagrant violations of the NFIP's requirements amount to a breach of contract, but these suits have not been successful.[79] Individuals have also sued

72. Pasterick, *supra* note 52, at 131.

73. *Id.*; 44 C.F.R. § 59.24.

74. Houck, *supra* note 32, at 91-92.

75. *See generally*, Houck, *supra* note 32, at 91-114.

76. *Id.* at 101.

77. *Id.* at 99.

78. Burby, *supra* note 20, at 178.

79. *See* United States v. St. Bernard Parish, 756 F.2d 1116, 1118-19 (5th Cir. 1985) (affirming dismissal of contractual claim and further holding that no implied right of action is available to the United States under the NFIP). While it foreclosed the possibility of breach of contract suits against municipalities, the Fifth Circuit in *United States v. St. Bernard Parish* left open the possibility of a subrogation suit, in which an insurer pays its insured and then sues an entity it claims caused the losses. *See id.* at 1128. Nevertheless, the federal government

their communities for their failure to comply with NFIP requirements on a tort theory, but these suits have similarly failed.[80]

It is also worth noting that the regulations do not require communities to restrict, let alone forbid, new construction in flood-prone areas.[81] Only by requiring that new structures be raised above base flood elevation do the regulations arguably impose an additional marginal cost on floodplain development, and this cost may well be outweighed by the availability of insurance to cover flood losses. Nevertheless, complying with the NFIP's regulations does appear to help mitigate flood damage. One analysis of losses from 1978 to 1994 showed that structures built before 1975, when the NFIP's base flood elevation rules went into effect, suffered about six times more damage than those built after 1975.[82] Another report, by the Interagency Floodplain Management Review Committee, found, in studying the 1993 flooding in the Midwest, that many communities there "actively discourage floodplain development" thanks to the increased costs associated with the NFIP's floodplain management requirements.[83]

As an additional incentive to help mitigate flood risks, the NFIP has also contained, since 1990, an optional, more burdensome set of requirements that communities can elect to implement in exchange for lower premiums. This is known as the Community Rating

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has not enjoyed success in pursuing such claims. *See* Wesley Davis, *Lessons Learned from the Flood Insurance ReMapping Controversy in Portland, Maine*, 16 OCEAN & COASTAL L.J. 181, 203-04 (2010) (citing Gabler v. Regent Dev. Corp., 470 So. 2d 149, 162 (La. Ct. App. 5th Cir. 1985) (holding that proximate cause of losses was an "act of God")).

80. *See Gabler*, 470 So. 2d at 162 (dismissing suit on the grounds that the damage was caused by "an act of God"); *see also* Timothy Kozlowski, *Dams and Levees are Not Enough: The Case for Recognizing a Cause of Action Against Non-Complying NFIP Communities*, 32 WM. & MARY ENVT'L L. & POL'Y REV. 245 (2007).

81. *See* St. Amand, *supra* note 3, at 20.

82. Pasterick, *supra* note 52, at 132. There may of course be other reasons for this discrepancy. For instance, structures built since 1975 are by definition newer, and may simply be in better repair than older structures. It may also be that newer structures are less likely to be located in flood plains for reasons having nothing to do with the NFIP, for instance because rivers are no longer the commercial hearts of most cities.

83. *Id.* (citing INTERAGENCY FLOODPLAIN MANAGEMENT REVIEW COMMITTEE, SHARING THE CHALLENGE: FLOODPLAIN MANAGEMENT INTO THE 21ST CENTURY 97 (1994)).

System.[84] Under the Community Rating System ("CRS"), communities are classified on a ten-point scale based on the number of points they earn for taking certain flood mitigation measures in pursuit of the CRS's goals. A class 10 community does nothing beyond what the NFIP requires and receives no discount on premiums, while a class 1 community must earn more than 4,500 points and is entitled to a 45 percent discount on premiums for properties within a special flood hazard area and a 10 percent discount on premiums for properties not in a special flood hazard area.[85]

The CRS lays out nineteen activities in four basic categories for which communities can earn points: (1) public information activities, which rewards communities that "advise people about the flood hazard, encourage the purchase of flood insurance, and provide information about ways to reduce flood damage;" (2) mapping and regulations, which rewards communities for, among other things, "preserving open space, protecting natural floodplain functions, enforcing higher regulatory standards, and managing stormwater;" (3) flood damage reduction activities, which rewards communities for "relocating or retrofitting flood-prone structures and maintaining drainage systems;" and finally, (4) "warning and response," under which communities are rewarded for creating "flood warning and response programs."[86] For each of the nineteen activities that fall into these four groups, the *CRS Coordinator's Manual* establishes a maximum number of points that can be earned. Notably, the most valuable activities in terms of possible points are "open space

84. 42 U.S.C. § 4022(b) (authorizing the creation of the Community Rating System). The provisions of the Community Rating System itself are laid out in a 614-page FEMA publication called THE NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY RATING SYSTEM COORDINATOR'S MANUAL (2013) [hereinafter *CRS Coordinator's Manual*], *available at* http://www.fema.gov/media-library/assets/documents/8768. Interestingly, the cover of the Manual features a photograph of a flooded bucolic landscape with a green lawn and a park bench in the foreground. The manual explains that this photograph represents "the ultimate floodplain, from a community's perspective: Nature follows its course with no threat to life or property. The waterfront is a community asset where people can relax and enjoy the view." *Id.* at ii. This attitude reflects the CRS's broader institutional goal of moving people out of floodplains rather than attempting to insulate them from the risks of flooding.

85. *CRS Coordinator's Manual*, *supra* note 84, at 110-13.

86. *Id.* at 110-14.

regulation" and "higher regulatory standards," followed by "acquisition and relocation" and "flood protection."[87]

According to FEMA, there are 1,200 communities in the Community Rating System, of which only one, Roseville, California, has attained a Class 1 rating.[88] Indeed, only about 70 of the 1,200 participating communities have a rating of Class 5 or better.[89] While these numbers may sound low, they represent real progress. As of 1998, there were 912 communities participating in the CRS, of which only two had reached Class 5.[90] The 1,200 communities in the Community Rating System today represent only 5 percent of the total number of communities that participate in the NFIP, but in this five percent of communities live approximately 67 percent of NFIP policyholders.[91] These figures stand in marked contrast to the status quo that existed before the creation of the NFIP, when a 1958 study showed that "virtually no local governments in the United States had adopted building or zoning regulations to minimize flood losses."[92] The substantial discounts available under the Community Rating System thus provide a very real incentive for communities to undertake various additional burdens in their efforts to mitigate flood risk. Whether these measures have led to a meaningful reduction in losses due to flooding is an open question.

C. Insuring Against the Risk

Once a community elects to participate in the NFIP, its residents become eligible to purchase flood insurance. The NFIP's provision of flood insurance at subsidized rates is the most controversial aspect of the program, and the source of the majority of its woes. It is also, however, an aspect of the program that is often oversimplified and misunderstood. The popular impression is that all NFIP

87. *Id.* at 110-16.

88. *About CRS*, FLOODSMART.GOV, http://www.floodsmart.gov/floodsmart/pages/crs/community_rating_system.jsp (last updated Dec. 16, 2014).

89. *Id.*

90. Pasterick, *supra* note 52, at 137.

91. *See* Luke & Abramovsky, *supra* note 42, at 9. Of course, as will be discussed below, the mere fact of a community's participation does not mean that every property owner in the community has flood insurance.

92. Burby, *supra* note 20, at 178 (citing Francis C. Murphy, *Regulating Flood Plain Development*, U. Chi. Dep't of Geography Research Paper No. 56 (1958)).

policyholders are paying subsidized rates.[93] This is simply not true. In reality, the NFIP mandates that actuarial rates be charged in most instances.[94] Biggert-Waters eliminated some of the exceptions to this rule, generating a dramatic response that led to the passage of the Homeowner Flood Insurance Affordability Act of 2014. In evaluating the viability and mechanics of the NFIP, it is useful to examine the details of how premiums are calculated.

The NFIP creates two basic categories of premiums: "risk premium rates," also known as "actuarial rates," and "chargeable rates," often referred to as "subsidized rates."[95] Actuarial rates are supposed to be actuarially sound in the sense that they are reflective of the risk faced by each property, plus the operating costs and expenses necessary to ensure that the program breaks even.[96] Chargeable rates, in contrast, are designed to be lower than actuarial rates, and are set at a level that "can reasonably be charged to insureds in order to encourage them to purchase" flood insurance.[97] Before the passage of Biggert-Waters, chargeable rates applied to all properties located within the 100-year flood zone that were constructed before the issuance of a FIRM (regardless of when either the policy or the property itself was purchased), as well as properties in the "emergency program," the temporary bridge program that exists until a FIRM is issued.[98] Finally, a longstanding provision capped increases in rates at no more than 10 percent per year.[99]

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93. *See, e.g.*, Kildow & Scorse, *supra* note 42 ("It is long past time for the government to stop subsidizing home and business owners who live and build in dangerous flood zones").

94. The tendency to refer in sweeping language to all federal flood insurance as subsidized seems to stem from the fact that there is no private market for flood insurance, suggesting that it is simply too expensive to be provided at market rates. In actuality, the private market for flood insurance died due primarily to the dual problems of correlation and the difficulty of accurately evaluating the flood risk faced by individual properties. *See supra* notes 47–49, 52.

95. *See* 42 U.S.C. §§ 4014, 4015; 44 C.F.R. § 59.1.

96. 42 U.S.C. § 4014(a)(1); 44 C.F.R. §§ 59.1, 61.7(a).

97. 44 C.F.R. § 61.7(b); 42 U.S.C. § 4015(b)(2). In practice, the chargeable rates that have been used are estimated to be about 38 percent of the actuarial rate that would reflect the full measure of risk faced by a particular property. Pasterick, *supra* note 52, at 134.

98. 44 C.F.R. § 61.9; *see infra* Part III.E.

99. 42 U.S.C. § 4015(e).

It is worth noting that the law does not mandate that particular rates be charged; these decisions are left to the discretion of FEMA. As the NFIP has evolved, FEMA's view of what constitutes a "chargeable rate" has shifted. In the 1970s the main objective was to encourage participation in the NFIP, and chargeable rates were quite low.[100] In the 80s and 90s these rates were increased, with the aim of making the NFIP more financially sound.[101] The percentage of properties paying chargeable rates has simultaneously decreased, going from about 75 percent in 1978 to about 35 percent in 1997.[102]

D. The NFIP's Financial Troubles

Of course, even though most policyholders do not pay subsidized rates, the NFIP itself is "subsidized" in various ways. The subsidy provided to pre-FIRM properties located in a 100-year flood zone in the form of an artificially low "chargeable rate" has long been a source of controversy, and is widely seen as a major contributor to the NFIP's infamous financial problems.[103] As of 2010, the GAO estimated that about 22 percent of all NFIP policyholders paid subsidized rates, which were about 35 to 40 percent of what their actuarial rates would be.[104] According to FEMA, properties paying subsidized rates, which were entitled to do so because they are located in 100-year flood zones but pre-date the issuance of a FIRM (which triggers the NFIP's design regulations), experience as much as five times more flood damage than new structures paying actuarial rates.[105] In addition to the subsidized, "chargeable" rates created by

100. Pasterick, *supra* note 52, at 134.

101. *Id.*

102. *Id.*

103. U.S. GOV'T ACCOUNTABILITY OFFICE, NATIONAL FLOOD INSURANCE PROGRAM: CONTINUED ACTIONS NEEDED TO ADDRESS FINANCIAL AND OPERATIONAL ISSUES 4 (2010) (testimony before congress) [hereinafter GAO, *Continued Actions*]; *see also* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-12, FLOOD INSURANCE: FEMA'S RATE-SETTING PROCESS WARRANTS ATTENTION (2008); U.S. GOV'T ACCOUNTABILITY OFFICE, FLOOD INSURANCE: OPTIONS FOR ADDRESSING THE FINANCIAL IMPACT OF SUBSIDIZED PREMIUM RATES ON THE NATIONAL FLOOD INSURANCE PROGRAM, GAO-09-20 (2008).

104. GAO, *Continued Actions*, at 6.

105. *Id.* In a way, this figure is an indication of the success of the mitigation requirements the NFIP imposes on post-FIRM properties in 100-year flood zones. Another, more optimistic, way of framing the issue is to observe that properties

statute, FEMA has allowed certain properties that have been remapped into riskier flood zones to continue paying their old, "grandfathered" rates, creating another set of policyholders who pay less than their actuarial cost.[106]

There are, in addition, myriad other factors that have contributed to the program's financial shortfalls. One of the most frequently cited is the so-called "repetitive loss problem," which is based on the observation that certain properties account for a wildly disproportionate share of the NFIP's expenses. Repetitive loss properties, which are properties that have had two or more flood insurance claims of $10,000 or more in ten years, account for about 1 percent of policies but 30 percent of the program's losses.[107] Despite attempts by Congress to mitigate this problem, it remains a major financial drag on the NFIP.[108]

There is also the ongoing difficulty of accurately quantifying the risk faced by policyholders. Some have suggested that the methodology the NFIP uses to measure risk is fundamentally flawed. As has been seen, much hinges on the use, as a statistical benchmark, of a flood that has a one percent chance of occurring in any given year. Category 3, 4, and 5 hurricanes are excluded from the program's basic benchmark of risk, since they are too statistically unlikely to qualify as 100-year floods.[109] Areas that would flood during such storms, but not during a 100-year flood, are thus not

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constructed in flood plains that are subject to the NFIP's mitigation requirements experience far less flood damage than their pre-FIRM neighbors.

106. *Id.* at 7.

107. *Id.* A number of these properties also receive subsidized rates, heightening their deleterious fiscal impact. *Id.* In one example cited by the New York Times, a home in Biloxi, Mississippi that was worth $183,000 flooded 15 times in the course of a decade, receiving flood insurance payments totaling $1.47 million. Eric Lipton, Felicity Barringer, & Mary Williams Walsh, *Federal Flood Insurance Program, Already Fragile, Faces New Stress*, N.Y. TIMES, Nov. 13, 2012, at A1.

108. *See* The Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Pub. L. No. 108-264 § 2, 118 Stat. 712, 713. The 2004 Act provided funding for States or communities to undertake efforts to reduce the risk posed by repetitive loss properties. These measures included elevation, relocation, demolition, and floodproofing. *Id.* § 102, 118 Stat. 715. The act also included a provision increasing the premiums for owners of repetitive loss properties who refused an offer of mitigation. *Id.* § 102(h), 118 Stat. 717. Nevertheless, the GAO noted in 2010 that despite these efforts, "the number of repetitive loss properties has continued to grow." GAO, *Continued Actions*, *supra* note 103, at 8.

109. Burby, *supra* note 20, at 177.

considered to be "special flood hazard areas" under the NFIP.[110] It has been suggested that using a more conservative benchmark, such as the 500-year flood, would be more appropriate.[111] FEMA was also historically prevented from taking into account long-term erosion resulting from climate change and rising sea levels in updating flood maps and setting premium rates.[112]

The net result of the NFIP's various financial shortcomings has been enormous debt. The program is statutorily entitled to ask the Treasury for loans when it experiences shortfalls,[113] and it has made liberal use of this privilege. As of November 2012, just after Hurricane Sandy struck the East Coast, FEMA owed the Treasury roughly $20 billion, and had not repaid any principal on its outstanding debt since 2010.[114] In January 2013, Congress increased the NFIP's borrowing authority to $30.4 billion after it became clear that the program would have to take on more debt to pay claims from Hurricane Sandy.[115] The NFIP's losses, the GAO has found, have created "substantial financial exposure for the federal government and U.S. taxpayers," landing the program a spot on the GAO's "high risk list," where it has remained since 2006.[116]

Indeed, the degree to which the NFIP is actuarially unsound, and the degree to which flood losses are being borne by American taxpayers generally rather than NFIP policyholders in the form of premiums, is nicely represented by the size of the NFIP's debt to the

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110. *See supra* note 53.

111. *See* Burby, *supra* note 20, at 177 (describing proposal by the Association of State Floodplain Managers). Indeed, NFIP claims in 2005, which resulted primarily from Hurricanes Katrina, Rita, and Wilma, totaled $17.7 billion. Lipton, et al., *supra* note 107, at A1.

112. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-283, HIGH-RISK SERIES: AN UPDATE 263 (2013) [hereinafter GAO, *High-Risk Series*]. Another feature of the NFIP that has drawn attention is its inability to purchase reinsurance, which is particularly important to private insurers in protecting against catastrophic risks. GAO, *Continued Actions*, *supra* note 103, at 5.

113. 42 U.S.C. § 4016.

114. GAO, *High-Risk Series*, *supra* note 106, at 261.

115. *See id*.; *see also* Lipton, et al., *supra* note 112, at A1 (reporting that payments associated with Hurricane Sandy were expected to reach $7 billion, while the NFIP could not at that time borrow more than another $3 billion). In the fall of 2012, the interest payments on the NFIP's debt to the treasury alone ranged from $90 to $750 million per year, depending on interest rates. *Id.*

116. GAO, *High-Risk Series*, *supra* note 112, at 261.

treasury. The NFIP has historically created a net flow of money from taxpayers to policyholders, effectively subsidizing owners of flood-prone property by artificially reducing the magnitude of the risk they bear. This subsidy artificially decreases the costs of flood-prone development, encouraging the very behavior the NFIP's mitigation provisions are meant to prevent.

E. Efforts at Reform: Biggert-Waters and its Fate

Congress took a major stab at solving some of the NFIP's financial problems in the Biggert-Waters Flood Insurance Reform Act of 2012 ("Biggert-Waters"), which eliminated subsidized premiums for certain categories of policyholders.[117] The law mandated that actuarial rates be charged to (1) second homes, (2) a broad category of repetitive loss properties, (3) businesses, and (4) any properties that undergo substantial flood damage or improvements after the act's enactment.[118] Biggert-Waters also eliminated subsidized rates for newly purchased properties and newly purchased policies, as well as policies reinstated after having lapsed.[119] The practice of "grandfathering" old rates was also eliminated by Biggert-Waters. Where previously a homeowner could continue paying a grandfathered rate even if a FIRM was revised to show that his or her property faced a higher risk, such properties would now be required to pay the full actuarial rate as shown on the newly revised map.[120] The final change that Biggert-Waters effected in the calculation of rates was an increase in the cap on annual rate increases, from 10 to 20 percent (and to 25 percent for repetitive loss properties).[121]

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117. Biggert-Waters Flood Ins. Reform Act of 2012, § 100205, Pub. L. No. 112-141, Title II, 126 Stat. 916 (July 6, 2012) [hereinafter Biggert-Waters]. The bill enjoyed support from both fiscal conservatives, concerned by the NFIP's drain on taxpayers, and environmentalists, who saw higher flood insurance premiums as reflective of the true costs of climate change.

118. *Id.* § 100205(a)(1)(A). Repetitive loss properties were defined as before, but a new catchall provision was added removing subsidized rates for any property "that has incurred flood-related damage in which the cumulative amounts of payments under this title equaled or exceeded the fair market value of such property." *Id.*

119. *Id.* § 100205(a)(1)(B).

120. *Id.* § 100207.

121. *Id.* § 100205(c). Biggert-Waters also contained a provision emphasizing that a flood insurance policy purchased from a private insurer (rather than from the NFIP) could satisfy the lender mandate, provided it met certain technical

Thus, after Biggert-Waters, the only policies for which subsidized rates would continue to apply indefinitely were for pre-FIRM primary residences in 100-year flood zones, so long as the property was not sold or substantially improved, did not incur repetitive flood losses, and the policy was not allowed to lapse. The elimination of grandfathered rates also meant that Biggert-Waters had a profound impact on many post-FIRM properties. Even though these had nominally been subject to actuarial rates rather than subsidized rates, their rates in many cases were based on old FIRMs and so were much lower than the actuarial rates required by current estimates of the risk they faced. Under Biggert-Waters, these rates were set to rise as well.

Many of the changes wrought by Biggert-Waters went into effect on October 1, 2013, and as its impact began to be felt, a tide of political opposition rose. Homeowners in many areas received notices informing them that their premium payments would be increasing, often dramatically.[122] In many examples cited in the media, premiums went from being a relatively minor part of a homeowner's financial life to a major expense rivaling or even exceeding the cost of mortgage payments.[123] People who had lived in their homes for decades, particularly those in post-FIRM structures who had been paying grandfathered rates, suddenly found themselves unable to afford their flood insurance payments. The increased premiums also began to drive down real estate prices in certain areas, since the sale of a pre-FIRM building would trigger new premiums at actuarial rates.[124] Flood insurance "reform," which in this case meant

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requirements. *Id.* § 100239(a)(4), 126 Stat. 959. Legislation to relax these requirements has recently been proposed, seeking to "clarify that any private flood insurance policy accepted by a State" satisfies the lender mandate. Flood Insurance Market Parity and Modernization Act of 2014, S. 2381, 113th Cong. 2d Sess. (2014).

122. *See*, *e.g.*, Lizette Alvarez & Campbell Robertson, *Cost of Flood Insurance Rises, Along with Worries* N.Y. TIMES, Oct. 12, 2013, at A14.

123. *See*, *e.g.*, Coral Davenport, *Popular Flood Insurance Law is Target of Both Parties*, N.Y. TIMES, Jan. 29, 2014, at A14 ("Diane Mazzuca . . . had been paying $595 annually for flood insurance on her $90,000 home. After Biggert-Waters ended federal flood insurance subsidies last June, she got an updated bill — for $4,492").

124. Alvarez & Robertson, *supra* note 122 (reporting that in some areas "home sales have come to a near standstill"). The *Times* also reported that sellers were

undoing reforms barely a year old, quickly became a salient political issue in places like Louisiana, and a grassroots anti-Biggert-Waters campaign was born.[125] By the beginning of 2014, the effort to "gut" Biggert-Waters enjoyed strong bipartisan support.[126]

This campaign achieved its goal on March 21, 2014, just twenty months after Biggert-Waters was passed, as the President signed into law the Homeowner Flood Insurance Affordability Act of 2014.[127] While previous versions of the law had simply delayed implementation of Biggert-Waters's premium reforms, the version that ultimately became law undid many of them altogether.[128] The Homeowner Flood Insurance Affordability Act repealed the provisions of Biggert-Waters that had eliminated subsidized rates for

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"hoping for wealthy cash buyers who are not required to carry flood insurance," a feature of the program that will be discussed in more detail below. *Id*.

125. *See*, *e.g.*, Bruce Alpert, *Political Foes Mary Landrieu and Bill Cassidy Are on the Same Side on Flood Insurance*, NEW ORLEANS TIMES-PICAYUNE, January 9, 2014; Editorial, *House Needs to Provide Real Relief on Flood Insurance Rates*, NEW ORLEANS TIMES-PICAYUNE, February 16, 2014; Ben Myers, *Louisiana Politicians Praise New Flood Insurance Law, With Eye on Next Steps*, NEW ORLEANS TIMES-PICAYUNE, March 24, 2014; *see also* Verchick & Johnson, *supra* note 3, at 711-12.

126. Davenport, *supra* note 123. Maxine Waters herself became a leader of the effort to rewrite the legislation she sponsored: "Never in our wildest dreams did we think the premium increases would be what they appear to be today," she explained. *Id.* As some commentators have observed, this claim is dubious at best. Verchick & Johnson, *supra* note 3, at 711-12. The GAO had long predicted that the elimination of subsidized rates would lead to such problems, and recommended offering subsidized premiums based on financial need. *Id.* at 712 (citing U.S. Gov't Accountability Office, *Options for Addressing the Financial Impact of Subsidized Premium Rates on the National Flood Insurance Program* (2008)).

127. Pub. L. No. 113-89, 128 Stat. 1020.

128. The House and the Senate originally passed two different versions of the law. The Senate, perceiving the main problem to be the elimination of grandfathered rates based on hastily prepared new FIRMs, simply delayed Biggert-Waters's rate increases until either the completion of an affordability study or six months after a certification from FEMA that it had come up with "technically credible flood hazard data in all areas where [FIRMs] are prepared or updated." S. 1926, 113th Cong., § 103(a)(3); *see also* Cong. Rec. S613-627 (Jan. 30, 2014). The Senate version was passed and sent to the House on January 31, but the House proceeded with its own version, which was finally passed by the Senate and signed into law. *See* H.R. 3370.

certain policies.[129] More specifically, the Act repealed the provisions of Biggert-Waters that eliminated subsidized rates for all new policies and for all policies on newly purchased properties.[130]

The Act also repealed the portion of Biggert-Waters that eliminated grandfathered rates. Under Biggert-Waters, rates were to be adjusted for "any property located in an area that is participating in the [NFIP] . . . to accurately reflect the current risk of flood to such property."[131] This provision was eliminated.[132] The Flood Insurance Affordability Act did, however, clarify that *new* policies on properties not located in 100-year flood zones would no longer enjoy protected grandfathered rates going forward if FEMA later remapped them into 100-year flood zones.[133] In other words, all policies on properties outside 100-year flood zones purchased after the Act's enactment would be subject to increased premiums if the properties they insured were later determined by FEMA to lie within special flood hazard areas, with any increase to be phased in gradually.[134] The reinstatement of preexisting grandfathered rates and subsidized rates for new policies and newly purchased properties was aimed at eliminating Biggert-Waters' impacts on the real estate market, so that prospective buyers of flood-prone properties could rest assured that they would continue paying subsidized rates, or would be able to get new policies at old, subsidized rates, at least for properties already determined to lie within 100-year flood zones. The new law also limited rate increases on all properties to no more than 18 percent each year.[135] Congress was able to conclude that the new Flood Insurance Affordability Act would not worsen the NFIP's financial condition thanks to the inclusion of a $25 annual surcharge on all

129. Homeowner Flood Ins. Affordability Act of 2014, Pub. L. No. 113-89, §§ 3, 4, 128 Stat. 1021-22 (2014).

130. *Id.* § 3, 128 Stat. 1021-22 (striking portions of Biggert-Waters § 100205, Pub. L. No. 112-141, 126 Stat. 917, codified at 42 U.S.C. § 4014(g)(1) - (2)).

131. Biggert-Waters, § 100207.

132. Homeowner Flood Insurance Affordability Act of 2014 § 4, Pub. L. No. 113-89, 128 Stat. 1022.

133. *Id.* § 6, 128 Stat. 1023.

134. *Id.*

135. *Id.* § 5, 128 Stat. 1022.

policyholders and a $250 surcharge on policies for business properties and second homes.[136]

From a policy perspective, the Flood Insurance Affordability Act is a minor disaster. Assuming it is in fact correct that the across the board surcharges make up for the loss in premiums to the NFIP, the act nonetheless does much to hamper the ability of flood insurance to incentivize mitigation of the country's overall flood risk. High insurance premiums had the ability to dissuade prospective purchasers from buying flood-prone properties. While this financial toll was obviously hard on those properties' owners, for those who chose not to buy it could have meant a life free from flooding. Subsidized rates do much to hinder the ability of flood insurance premiums to act as a kind of warning mechanism, as will be discussed in more detail below. The continuation of grandfathered rates has a similarly distorting effect on the ability of flood insurance premiums to incentivize mitigation activity. After the bill's passage, homeowners could rejoice that they would no longer need to elevate their homes in search of more affordable premiums.[137] Lost in the jubilation was the fact that by elevating, a home might be dry through the next flood instead of several feet underwater. Still, the Homeowner Flood Insurance Affordability Act did leave in place some of Biggert-Waters's reforms, notably its elimination of subsidized rates for second homes, businesses, repetitive loss properties, and properties that undergo substantial damage or improvements.

F. Requiring Participation: The Lender Mandate

Efforts to raise rates have always faced the specter of adverse selection. If FEMA raises rates closer to actuarially sound levels, the thinking goes, people will simply choose not to purchase flood

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136. *Id.* § 8, 128 Stat. 1023-24; *see also* Cong. Rec. H2134 (Mar. 4, 2014) (remarks of rep. Hensarling) (noting that H.R. 3370 is "technically PAYGO compliant").

137. *See*, *e.g.,* Annie Linsky, *Good News: The Government Will No Longer Make You Put Your House on Stilts*, BLOOMBERG BUSINESSWEEK, Mar. 14, 2014, *available at* http://www.businessweek.com/articles/2014-03-14/good-news-the-government-will-no-longer-make-you-put-your-house-on-stilts.

insurance, sending the program into ever deeper financial straits.[138] Theoretically at least, the people most likely to opt out of the program as rates increase are those who face (or at least perceive themselves to face) the lowest risk, leaving behind a riskier, and therefore more expensive, pool of policyholders.[139]

The source of this problem is the fact that individuals are largely free to decline to purchase flood insurance if it does not seem appealing to them. While the NFIP does include a mechanism that forces certain people to purchase policies, it is underinclusive, underenforced, and based on an erroneous understanding of the constitutional limits on Congress's power, with the result that the percentage of individuals in flood-prone areas who have flood insurance is often tragically low.

This mechanism, known as the "lender mandate," requires individuals to purchase flood insurance on properties located within a 100-year flood zone whenever a "regulated lending institution" provides a mortgage secured by that property.[140] In fact, it would be more accurate to say that the statute requires lenders to require borrowers to purchase flood insurance. The statute directs federal entities that regulate lending institutions to promulgate regulations to this effect, and they have.[141] Essentially, all new loans secured by property in 100-year flood zones are supposed to carry with them the requirement that the borrower obtain flood insurance.

As is evident, the scope of the lender mandate is limited. It does not require that anyone outside a 100-year flood zone purchase flood insurance, despite the fact that, according to FEMA, properties outside these areas have historically accounted for about 25 percent of NFIP claims.[142] It also does not apply in non-participating

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138. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-10-1063T, NATIONAL FLOOD INSURANCE PROGRAM: CONTINUED ACTIONS NEEDED TO ADDRESS FINANCIAL & OPERATIONS ISSUES 3 (2010).

139. *See* Luke & Abramovsky, *supra* note 42, at n.20.

140. 42 U.S.C. § 4012a(b). The amount of insurance required is the lesser of (1) the maximum amount of coverage under the NFIP, (2) the outstanding principal balance of the loan, or (3) the insurable value of the structure. *Id.*

141. *See* Luke & Abramovsky, *supra* note 42, at n.56 (citing regulations).

142. *Id.* at 14. Other estimates suggest that even this figure may be too low. One study, for instance, estimated that 83 percent of losses from hurricane winds and flooding resulted from Category 3, 4, and 5 storms, all of which are too infrequent to qualify as 100-year flood events. Burby, *supra* note 20, at 177. Of course, this number does not isolate the percentage of such damage that occurred outside 100-

communities, regardless of their flood risk, since individuals in those communities are not eligible to purchase flood insurance in the first place.[143] It also bears emphasizing that the lender mandate does not apply to anyone who owns property without a mortgage.[144] Overall, it has been estimated that the lender mandate applies to about 50 to 60 percent of single family homes in 100-year flood zones.[145]

Even where the lender mandate does require that individuals purchase flood insurance, enforcement is often lax. It was not until 1994 that the NFIP explicitly required that flood insurance be maintained for the life of the loan at issue.[146] Moreover, the lender mandate must be enforced by whichever agency has direct oversight of the lender in question.[147] To a surprising degree, banks have failed to require that their debtors carry flood insurance.[148] A 2006 study

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year flood zones, but it does call into question the propriety of using the 100-year flood as the statistical benchmark for requiring flood insurance.

143. It should be noted, however, that the number of individuals facing a special flood hazard in non-participating communities is probably quite small. *See supra* note 64. Originally, regulated lending institutions were prohibited from lending in communities that did not participate in the NFIP. This rule was removed by statute in 1977. *See* Housing and Community Development Act of 1977, Pub. L. No. 95-128 § 703(a), 91 Stat. 1144 (1977).

144. In recent years, the share of homes purchased without a mortgage has increased. One study estimated that more than half of homes sold in 2012 were "all cash" sales. Nick Timaros, Report: *Half of All Homes Are Being Purchased with Cash*, Wall St. J., Aug. 15, 2013, *available at* http://blogs.wsj.com/developments/2013/08/15/report-half-of-all-homes-are-being-purchased-with-cash/; *see also* Julia Zhu, *An Astonishing Share of Homebuyers Are Paying All Cash,* NPR, Jan. 24, 2014, *available at* http://www.npr.org/blogs/money/2014/01/23/265264740/an-astonishing-share-of-home-buyers-are-paying-all-cash.

145. Lloyd Dixon, et al., THE NATIONAL FLOOD INSURANCE PROGRAM'S MARKET PENETRATION RATE: ESTIMATES AND POLICY IMPLICATIONS xvii (RAND 2006).

146. Reigle Community Development and Regulatory Improvement Act of 1994, Pub. L. No. 103-325 § 522(a), 108 Stat. 2160, 2257.

147. Luke & Abramovsky, *supra* note 42, at 15.

148. *See* Rachel Lisotta, *In Over our Heads: The Inefficiencies of the National Flood Insurance Program and the Institution of Federal Tax Incentives*, 10 LOY. MAR. L. J. 511, 518 (2012). One possible explanation for banks' failure to ensure that borrowers purchase and maintain flood insurance is that mortgages are frequently sold and securitized on the secondary market. *See* Scales, *supra* note 46, at n.68 and accompanying text.

by RAND estimated compliance with the lender mandate at between 75 and 80 percent nationally, with significant local variation.[149]

Nevertheless, the lender mandate does make a difference. The same RAND study estimated that only about 20 percent of homes not subject to the lender mandate carried flood insurance.[150] Overall, about half of all single-family homes in 100-year flood zones have NFIP policies, while outside the 100-year flood zone, the NFIP's market penetration is estimated to be only about 1 percent.[151] The magnitude of the problem is often revealed by disasters themselves. In St. Bernard Parish, which was decimated by Hurricane Katrina, only 57.7 percent of homes had flood insurance before the storm.[152] In Orleans Parish, of which about 80 percent lay underwater in the days after Katrina,[153] only 40 percent of homeowners had flood insurance.[154] Along the Gulf Coast of Mississippi, which was virtually wiped out by storm surges, less than 10 percent of homes had flood insurance.[155]

This weak participation undermines the NFIP in several crucially important ways. First, it deprives the program of valuable premiums that could be used to help it achieve its age-old mandate of self-sufficiency. Second, it removes the safety net that flood insurance provides, leaving the uninsured dependent on uncertain federal aid in the wake of major disasters, and increasing the pressure on the federal government to provide such aid. Finally, and perhaps most importantly, allowing individuals to decline to purchase flood insurance deprives the program of its vital signaling function, its ability to force individuals to acknowledge and internalize the risks they face by placing a regular, yearly dollar figure on that risk. This last feature represents the NFIP's, and indeed the country's, greatest hope of discouraging risky coastal development as a matter of policy

149. Dixon, et al., *supra* note 145, at xvii.

150. *Id.*

151. *Id.* at xvi.

152. Robert H. Jerry, II & Steven E. Roberts, *Regulating the Business of Insurance: Federalism in an Age of Difficult Risk*, 41 WAKE FOREST L. REV. 835, 877 (2006).

153. *See* Jere Longman & Swell Chan, *Flooding Recedes in New Orleans; U.S. Inquiry is Set*, N.Y. TIMES, Sept. 7, 2005, at A1.

154. Jerry & Roberts, *supra* note 152, at 877.

155. Scales, *supra* note 46, at 15.

at the federal level. It is for these reasons that an individual mandate for flood insurance is so badly needed.

IV. SOLVING THE RIDDLE OF FLOOD-PRONE DEVELOPMENT: AN INDIVIDUAL MANDATE FOR THE NFIP

The NFIP has been plagued by dueling problems since its inception. On the one hand, political pressures and the fear of adverse selection have driven the program to provide rates that are in many cases cheaper than they should be. This is, in a sense, in keeping with the goal of providing the safety net of flood insurance by ensuring that it remains attractive to owners of flood-prone properties. On the other hand, by making flood insurance cheaper than it should be, the NFIP creates a moral hazard that undermines its goal of helping reduce the nation's aggregate flood risk. Even though it requires the implementation of a complex set of mitigation measures, by subsidizing coastal development the NFIP has actually coaxed more people into harm's way, even while it attempts to blunt the force of that harm. This problematic tension is in a sense baked in to the NFIP,[156] and has led to calls for its wholesale elimination, particularly as it becomes clear that climate change will only exacerbate the various flood risks we face. To accommodate these competing goals, the NFIP must strike a balance that avoids the opposing perils of providing such a robust safety net that it ends up making life in a flood-prone area more attractive, and making participation in the program so burdensome that it drives away potential insureds.

In this Section, I will argue that requiring that owners of property in flood-prone areas hold flood insurance would make this balance much easier to strike. Part IV.A discusses the details of this proposal, including the scope of its application and its constitutional

156. The danger of creating a moral hazard by providing subsidized flood insurance has been a primary concern since before the program's creation, when a federal task force on flood control policy observed that if "insurance were used to subsidize new capital investment, it would aggravate flood damages and constitute gross public irresponsibility." *Communication from the President of the United States Transmitting a Report by the Task Force on Federal Flood Control Policy*, H.R. Doc No. 465, 89th Cong., 2d Sess., at 18 (1966). To counteract this problem, the report suggested that "owners of subsidized development [be] precluded from rebuilding destroyed or obsolete structures on the flood plain." *Id.* This became a feature of the NFIP, although in a much weaker form. *See supra* note 70.

basis. Part IV.B suggests that an individual mandate would help the program escape its financial straits by increasing the pool of premiums available. Part IV.C argues that requiring all owners of flood-prone property to hold insurance would strengthen the important safety net the NFIP provides, reducing pressure on Congress to provide massive relief programs in the wake of major floods. Finally, Part IV.D argues that with an individual mandate, and with premiums set at actuarial levels, the NFIP could solve its moral hazard problem and become an important tool for discouraging, to an efficient degree, ownership of flood-prone properties. In this sense, insurance can act as a form of land use regulation, one that is more predictable and efficient than traditional nuisance law while also being more nuanced and flexible than zoning.

A. What an Individual Mandate for Flood Insurance Might Look Like

At its most basic level, an individual mandate for flood insurance would simply require that every owner of property in a 100-year flood zone purchase and maintain flood insurance. This system would do away with the NFIP's current reliance on the lender mandate as well as its distinction between pre- and post-FIRM properties. There is, after all, no policy reason for requiring that only properties with mortgages carry flood insurance. It seems, rather, that the lender mandate was motivated by a desire to avoid raising the issue of whether Congress had the constitutional power to require individuals to purchase flood insurance.[157] Without any link to whether or not the property is encumbered by a mortgage, there would no longer be any reason to leave enforcement of the mandate in the hands of banks and their regulators, which have not been very effective in this role.[158] Far better, it would seem, would be a tax-based system like that used to ensure compliance with the individual mandate for health insurance.

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157. *See* Florida v. United States, 648 F.3d 1235, 1289-90 (11th Cir. 2011) (arguing that Congress's failure to implement an individual mandate for flood insurance is evidence that it did not believe it had the power to do so). The Supreme Court's recent decision in *Sebelius* makes clear that an individual mandate would be permissible if structured as a tax. Nat'l Fed'n of Indep. Bus. v. Sebelius, 132 S. Ct. 2566, 2585 (2012).

158. *See supra* notes 146-149.

There is, similarly, no longer any justification for distinguishing between properties on the basis of whether they pre- or post-date the issuance of a FIRM. The reason that pre-FIRM properties currently enjoy subsidized, "chargeable" rates is that only post-FIRM properties are required to be elevated above base flood level.[159] (Pre-FIRM properties, which sit below base flood level, thus face a much higher risk, and would be required to pay much higher rates if those rates reflected their actuarial risk.) With an individual mandate, there would be no need to coax such properties into the program with cheap premiums. There is no other justification for granting owners of pre-FIRM properties an entitlement to subsidized rates.

It makes sense, instead, to account for any fairness concerns by reducing the cost of flood insurance for homeowners who cannot afford it. Better to provide a break on premiums based on financial need than on the age of one's house. The danger here, however, is that making flood insurance too cheap for low-income homeowners would have the effect of encouraging the poor to settle in especially risky areas. The fallout from Biggert-Waters has already shown that flood insurance premiums can have a significant impact on real estate prices.[160] If a neighborhood faces a particularly acute flood risk, it may be that mandatory flood insurance premiums are so high that no one who is required to pay them could afford to live there, leading to a drop in prices. By exempting low-income homeowners from paying flood insurance, the individual mandate would effectively

159. This distinction is natural enough; it would not be feasible to require at the stroke of a pen that every existing structure be elevated above base flood level.

160. *See*, *e.g.,* Jodi Schwan, *Flood Insurance Puts Damper on Market*, ARGUS LEADER (Sioux Falls, SD), Feb. 28, 2014, *available at* http://www.argusleader.com/article/20140228/BJUPDATES/302270005/Flood-insurance-puts-damper-market; Kathleen Lynn, *North Jersey Homeowners Trapped in Flood Zones Looking for Help from Feds*, THE RECORD (Hackensack, NJ), Feb. 25, 2014, *available at* http://www.northjersey.com/real-estate/rising-flood-insurance-premiums-make-homes-impossible-to-sell-1.735866; Jeff Frantz, *As Flood Insurance Gets More Expensive, Experts Predict Lower Home Values, Fewer Sales, More Foreclosures*, PATRIOT-NEWS (Harrisburg, PA), Jan. 23, 2014, *available at* http://www.pennlive.com/midstate/index.ssf/2014/01/national_flood_insurance_progr_3.html; Nick Malawskey, *Family Wants to Move On, but Creekside House Isn't Selling; Agent Blames Flood Insurance Rates*, PATRIOT-NEWS (Harrisburg, PA), Jan. 24, 2014, *available at* http://www.pennlive.com/midstate/index.ssf/2014/01/flood_insurance_homeowners_sto_3.html.

increase their incentive to move to a risky area, by providing for free something that would represent a major expense of owning such properties for everyone else.

One potential solution to this problem would be to stop short of making flood insurance entirely free for low-income individuals and to tie premiums to a percentage of income rather than to the actuarial risk faced by the property. Homeowners with incomes below a certain threshold would thus be required to pay the lower of the actuarial cost of the flood insurance on their property or some percentage of their income. This approach would avoid forcing the poor out of their homes, but would retain enough of the cost associated with flood insurance to keep risky areas from becoming disproportionately attractive to those who cannot afford to pay actuarial rates.

More could also be made of the NFIP's "buyout" program. The buyout program makes federal funds available to cover up to 75 percent of the cost of purchasing insured, flood-damaged homes, at a price that is the *greater* of (1) the purchase price paid by the current owner, (2) the amount of any outstanding mortgage on the property, or (3) the value of the property before it was last flooded.[161] Once the property has been acquired, it must remain open space forever.[162] Notably, the burden is on states to set up such programs and receive and process applications from individuals. There is no standing buyout offer from the federal government, nor is there any way to apply for a buyout from FEMA directly.[163] Making buyouts available to all policyholders who face, say, an increase in their premiums of more than a certain percentage would help ease the burden of homeowners whose properties stand to lose value as flood insurance premiums rise. For those without the resources to move elsewhere, it could provide an invaluable lifeline.[164]

Why keep the line between properties in the 100-year flood zone and those outside it, and require that only the former carry flood

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161. 42 U.S.C. § 4102a. Local governments are explicitly barred from using eminent domain to acquire properties. 44 C.F.R. § 80.11(a).

162. 44 C.F.R. § 80.11(f).

163. *Id*. § 80.5; *see also* FEMA, *Hazard Mitigation Assistance – Property Acquisition (Buyouts),* https://www.fema.gov/application-development-process/hazard-mitigation-assistance-property-acquisition-buyouts.

164. *See* Daniel D. Barnhizer, *Givings Recapture: Funding Public Acquisition of Private Property Interests on the Coasts*, 27 Harv. Envtl. L. Rev. 295, 346 (2003).

insurance? As many have pointed out, the 100-year flood zone is a crude and sometimes wildly misleading metric for gauging flood risk, and it is certainly not the case that properties outside the zone face no flood risk at all.[165] It may well make sense to make the 500-year flood the NFIP's statistical baseline.[166] There are, however, several reasons to stop short of simply requiring that *everyone* purchase flood insurance, regardless of what flood zone they inhabit.[167] First, estimating the national flood risk at the level of individual properties is a gargantuan undertaking, one that took FEMA years to complete.[168] As flood risks change, whether due to erosion, subsidence, or sea level rise, FEMA must update its risk maps, a critically important and costly enterprise. There is value in continuing to use a framework into which so much has been invested, and that has the benefit of decades of revision and refinement behind it. Second, and more importantly, stopping short of requiring universal coverage creates a sharp line, with those required to pay for flood insurance separated from the rest, instead of infinite gradations applicable to everyone. Because flood risk, unlike health risk, is something that one can essentially avoid entirely, it makes sense to strengthen the incentive to avoid purchasing flood-prone property by drawing a bright line around those who face a certain level of risk, however imperfect that line may be.

B. Easing the NFIP's Financial Problems

Incorporating an individual mandate into the NFIP would do much to help mitigate the program's notorious financial problems. By increasing the number of policyholders, an individual mandate would

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165. *See supra* notes 109-111. In its report on coastal risk on the East and Gulf Coasts, the National Research Council pointed out that "[t]here is no solid basis of evidence to justify a default 1 percent annual chance (100-year) design level of coastal risk reduction." NATIONAL RESEARCH COUNCIL, *supra* note 5, at 6. The report went on to note that this baseline "was established for management purposes, not to achieve an optimal balance between risk and benefits," and that there is "no evidence that reducing risk to a 1 percent annual-chance event is in the best interests of society or that this level is necessarily acceptable to the general public." *Id.*

166. *See supra* note 111.

167. *See* Luke & Abramovsky, *supra* note 42, at 7, 49-55 (proposing a system of mandated universal coverage for flood insurance, with premiums paid through tax withholding).

168. *See* Knowles & Kunreuther, *supra* note 4, at 332-36.

increase the pool of premiums available to the NFIP, helping spread the risk across a larger pool of insureds. It would also eliminate the adverse selection problem, in which those who perceive themselves to face lower flood risk drop out of the program, leaving behind an ever-riskier pool of policyholders. In the early years of the program, dismal participation by communities and individuals led Congress to pass a series of reforms aimed at making flood insurance more enticing, some of which plague the NFIP to this day.[169] Without the constant threat of adverse selection, the NFIP would have more freedom to raise rates to actuarial levels without fearing a mass exodus.[170] Of course, more policyholders means more premiums, but it also means more claims that must be paid in the event of a flood. To what extent would increasing the number of participants in the NFIP truly help the program financially?

In answering this question, much depends on the extent of the adverse selection problem in flood insurance. If those who choose not to purchase flood insurance are in fact statistically less likely to experience flooding, then getting them back into the program would help improve the pool of policyholders from an actuarial perspective. An analogy can be drawn to the recent debate over the individual mandate in the Affordable Care Act. The health insurance market faced a similar adverse selection problem: healthy young people were more likely to simply go without health insurance, and insurers found themselves struggling without their valuable premiums.[171] Similarly,

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169. *Id.* at 337-38.

170. The *political* reaction to increased rates, on the other hand, would likely be even more intense than it is now. As explained below, however, there are reasons to see this as a positive development both for the program and for the country's overall exposure to flood risk. *See infra* text at notes 209-211.

171. The passage of the Affordable Care Act was expected to exacerbate this effect dramatically, as it both reduced the degree to which insurance companies could charge higher premiums based on individual risk factors and guaranteed that those who became sick and sought insurance would be able to get coverage for preexisting conditions. *See* Nat'l Federation of Independent Business v. Sebelius, 132 S. Ct. 2566, 2585, Brief for America's Health Ins. Plans, et al. as *Amici Curiae*, at 5-6. These measures made the ACA's individual mandate all the more critical in ensuring that private health insurance markets would continue to thrive. Amicus Brief of America's Health Ins. Plans, at 7 (citing 42 U.S.C. § 18091(2)(I) (Congressional finding that individual mandate's minimization of adverse selection was "essential to creating effective health insurance markets in which improved health insurance products that are guaranteed issue and do not exclude coverage of preexisting conditions can be sold.")). Absent the individual mandate, the Court

assuming it is in fact the case that those who do not have flood insurance face a lower flood risk, on average, than those who do, an individual mandate would strengthen the NFIP.[172]

When discussing those who own property in 100-year flood zones and yet do not have flood insurance, it is important to remember that this group consists of two categories: those to whom the NFIP's "lender mandate" does not apply, and those who are currently required to maintain flood insurance and yet do not do so. An individual mandate would apply to the second group only to the extent that it is more effective at ensuring compliance than the lender mandate is today. There is every reason to think this could be achieved. If participation in the NFIP had nothing to do with whether one's property was encumbered by a mortgage, there would be no reason for financial regulators, and the banks they oversee, to retain the duty of ensuring that borrowers comply with their obligation to hold flood insurance. Since this system has not been particularly effective, giving the job of enforcing the mandate to FEMA, or indeed to the IRS, would likely increase participation among those who are already obligated to participate but do not.[173]

It is hard to generalize about the first group, property owners who are not currently subject to the lender mandate but would be required to purchase flood insurance by an individual mandate. One is tempted to conjure up images of the vacation homes of hedge fund managers, perched on oceanfront dunes and unencumbered by debt. This image may well be misleading. In Pennsylvania, for instance, where flood zones are concentrated along rivers rather than on

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observed, healthy people would "delay purchasing health insurance until they become sick, relying on the promise of guaranteed and affordable coverage." *Sebelius*, 132 S. Ct. at 2585.

172. While no comprehensive study has evaluated the magnitude of the gap between the flood risk faced by those who purchase flood insurance and those who do not, adverse selection is almost universally treated as a significant problem faced by the NFIP and a major factor limiting FEMA's ability to raise rates. *See*, *e.g.,* GAO, *Continued Actions*, *supra* note 103, at 5-6.

173. The Affordable Care Act penalizes through the tax system individuals who fail to maintain health insurance. *Sebelius*, 132 S. Ct. at 7. Although it remains to be seen how effective this provision will be, a similar enforcement mechanism could easily be adopted for flood insurance. *See* Luke & Abramovsky, *supra* note 42, at 7, 42-55 (proposing replacement of the NFIP with a "mandatory social insurance plan" paid for with income tax withholding and featuring refunds and rate adjustments to encourage mitigation).

beaches, properties at risk of flood are, on average, lower in value and contain older residents who are more likely to live in poverty.[174] Regardless of whether property owners newly subject to a flood insurance mandate would be, as a group, more or less wealthy, their very participation in the NFIP would help it financially. Because flood insurance risks are so highly correlated, having a larger pool of policyholders necessarily makes the program more financially stable.[175]

C. Strengthening the NFIP's Safety Net and Relieving Pressure Elsewhere

By requiring homeowners in flood-prone areas to carry flood insurance, an individual mandate would also strengthen the important safety net the NFIP provides. This feature of flood insurance – its ability to insulate property owners from flood losses – would seem to be an unqualified good, and yet it has been one of the aspects of the NFIP that has led some to question the very idea of federally provided flood insurance. A common refrain among those who have called for the outright elimination of the NFIP is that by helping property owners recoup their flood losses, the program is effectively encouraging them to rebuild in areas where it may not be wise, from a broader policy perspective, to do so. Assuming that we should be doing all we can to discourage flood-prone development, these critics argue, the best course is to simply eliminate the NFIP and let property owners bear their losses and move to higher ground.[176]

This argument rests on a faulty premise. The political reality in America is that flood victims are not likely to be left to fend for themselves in the absence of a federal flood insurance program. Even *with* the NFIP in place, Congress has been moved to provide,

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174. Jeff Frantz, *Five Things We Learned from the Senate Hearing on Skyrocketing Flood Insurance Costs*, PATRIOT NEWS (Harrisburg, PA), Jan. 28, 2014, *available at* http://www.pennlive.com/midstate/index.ssf/2014/01/national_flood_insurance_progr_11.html (reporting testimony by Executive Director of the Center for Rural Pennsylvania before state Senate); *see also* Verchick & Johnson, *supra* note 3, at 715 (noting that "many floodplain communities . . . are not the playgrounds of the rich, but the working-class neighborhoods whose low property values attracted and maintained residents over time).

175. Luke & Abramovsky, *supra* note 42, at 22-24.

176. *See supra* note 42.

with overwhelming support, massive aid packages in the wake of large floods. In the immediate aftermath of Hurricane Katrina, Congress approved, by a vote of 410 to 11 in the House and 97 to 0 in the Senate, $51.8 billion in aid.[177] That allocation would prove to be only the first of a series, eventually amounting to roughly $120 billion.[178] Portions of a number of post-Katrina appropriations eventually became Louisiana's "Road Home" program, which began life with roughly $7.5 billion in federal funds.[179] Under the program, homeowners received money to rebuild or repair their homes based on the amount of damage not covered by flood insurance.[180] After Hurricane Sandy, Congress provided roughly $60 billion in aid, not just for the rescue and personal safety of victims, but also to compensate for property damage.[181]

Nor is this solicitude for the needs of disaster victims a modern phenomenon. Congress has, since the dawn of the republic, displayed a remarkable willingness to indemnify the victims of disasters of all varieties.[182] Some have attributed this munificence to the same correlation problem that made private flood insurance so difficult to provide. Because disasters tend to be concentrated in one geographic area, their victims form natural "interest groups" that, in our political system, can plead their case in Congress with particular

177. Peter Baker & Amy Goldstein, *Congress Approves $51.8 Billion for Victims*, WASH. POST, Sept. 9, 2005.

178. BRUCE R. LINDSAY, CONG. RESEARCH SERV., R43537, FEMA'S DISASTER RELIEF FUND: OVERVIEW AND SELECTED ISSUES 13 (2014).

179. Davida Finger, *Stranded and Squandered: Lost on the Road Home*, 7 SEATTLE J. SOC. JUST. 59, 64, n.26 (2008) (citing series of appropriations); Leslie Eaton, *Slow Home Grants Stall Progress in New Orleans*, N.Y. TIMES, Nov. 11, 2006, at A1.

180. *See* Leslie Eaton, *Hurricane Aid Finally Flowing Directly to Homeowners*, N.Y. TIMES, July 17, 2006, at A1. The Road Home Program funneled money appropriated by Congress through the department of Housing and Urban Development's Community Development Block Grant program. Louisiana and Mississippi administered distinct programs, with different rules and different priorities. One notable feature of Louisiana's plan was that it imposed a thirty percent penalty on homeowners who were required to purchase flood insurance under the NFIP's lender mandate but did not do so. *See id.*

181. Lindsay, *supra* note 178, at 13.

182. Michele L. Landis, *Let Me Next Time Be 'Tried by Fire': Disaster Relief and the Origins of the Welfare State 1789-1874*, 92 NW. U. L. REV. 967, 973 et seq. (1998).

effectiveness.[183] Others have detected a moral judgment, one that treats victims as blameless and thus deserving.[184] The broader point is that generous disaster relief has always been a theme of Congressional action. There is thus every reason to think that if the NFIP were eliminated, the political pressure to provide this type of aid would only increase.[185] The moral hazard that arises from indemnifying the losses of flood victims wasn't created by the NFIP. The NFIP merely allowed it to take a particular shape, one channel among many by which the government socializes the losses associated with floods.

It is thus more productive to start with the premise that the risks of flooding will be spread beyond the property owners who bear them, whether through the NFIP or otherwise. Under the NFIP, at least as it is intended to function, those risks are spread onto other owners of flood-prone properties. Without the NFIP, they would be spread onto all American taxpayers. The popular notion that the NFIP creates a moral hazard by incentivizing property ownership in flood-prone

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183. *See* Saul Levmore, *Coalitions and Quakes: Disaster Relief and Its Prevention*, 3 U. CHI. L. SCH. ROUNDTABLE 1, 4-6 (1996).

184. Landis, *supra* note 182, at 971, 988-98 (tracing the "intellectual and spiritual traditions prevalent among the founders" that "provide some insight into the sympathetic treatment they afforded disasters").

185. It would also, I submit, be morally unacceptable to adopt a policy of refusing any governmental aid to owners of flooded property. Arguments for the elimination of the NFIP are often couched in moral terms, suggesting that people who "choose" to own property in flood-prone areas "know" the risks and thus should be forced to bear them. *See*, *e.g.,* Richard Reeves, *Hurricane$, Earthquake$ and Flood$: If People Want to Build Their Houses in Dangerous Places, Why Should the Rest of Us Pay When Disaster Strikes?*, 26 WASH. MONTHLY 10 (1994). As for the concept of choice, it is simplistic and unfair to think that every flood victim could just move out of a flood-prone area if he or she chose. Here I am thinking in particular of residents of the Lower Ninth Ward, which was quite poor but had a notably high rate of homeownership before large swaths of the neighborhood were wiped out by Hurricane Katrina. *See* Juliette Landphair, *The Forgotten People of New Orleans: Community, Vulnerability, and the Lower Ninth Ward*, 94 J. OF AM. HIST. 837, 837, n.3 (Dec. 2007). Nor does the idea that people "know" the risk when they move in hold up under scrutiny. Accurately understanding the flood risk faced by a particular property is a task that defeated private insurance companies in the 20th century and has at times flummoxed even the Federal Emergency Management Agency. Homeowners typically "know the risks" of flooding only because they are able to consult a FIRM that has been prepared by the government, a document that would presumably not exist if the call to eliminate the NFIP were heeded.

areas is thus misleading at best, because it requires assuming that individuals would be forced to bear flood risks on their own if the NFIP were eliminated.[186] In fact, far from *creating* a moral hazard, the NFIP has the potential to substantially *reduce* the corrosive subsidy that other forms of flood protection and aid provide to owners of flood-prone property.

D. Efficiently Discouraging Risky Development

It is, at this point, clear that we should not be encouraging ownership of flood-prone property by providing a subsidy in the form of below-market flood insurance. Indeed, if we are to stand any chance of adapting to a future of rising seas, powerful hurricanes, and frequent downpours, national policy should help facilitate the migration of people out of harm's way. Governmental approaches to discouraging settlement in flood zones could take a wide range of forms. The most extreme approach would be to simply outlaw permanent human habitation in certain areas, which would make floods relatively toothless in terms of their ability to harm or kill people or even disrupt our daily routines or affect the economy. This has, in fact, been done in certain limited areas.[187] Prohibiting flood-

186. For all its problems, the NFIP has proved to be a much more effective tool for compensating property owners who suffer flood losses than alternative mechanisms that have been established after major disasters. Louisiana's Road Home Program was scandalously inept at handing out money. In its first four months, the program closed fewer than one hundred homeowner grants, leading the RAND Corporation to conclude that "the overall timeliness of the grant-making process has not been consistently good and predictable." RICK EDEN & PATRICIA BOREN, TIMELY ASSISTANCE: EVALUATING THE SPEED OF ROAD HOME GRANTMAKING 68 (RAND Gulf State Policy Institute, RAND Corporation 2008), *available at* http://www.rand.org/pubs/documented_briefings/2008/RAND_DB557.pdf; *see also* Editorial, *The Long Wait Home*, NEW ORLEANS TIMES-PICAYUNE, Mar. 23, 2008, at 6 (responding to RAND report); Finger, *supra* note 179, at 62-63. The NFIP, by contrast, had paid more than 95% of all its Gulf Coast claims by May 2006, eight months after Katrina. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, NATIONAL FLOOD INSURANCE PROGRAM: NEW PROCESSES AIDED HURRICANE KATRINA CLAIMS HANDLING, BUT FEMA'S OVERSIGHT SHOULD BE IMPROVED, at 6 (Dec. 2006), *available at* www.gao.gov/assets/260/254481.pdf.

187. *See* Lucas v. S. C. Coastal Council, 505 U.S. 1003 (1992) (holding that South Carolina's Beachfront Management Act had effected a taking by preventing property owner from building any permanent habitable structure on coastal land he had purchased with that goal in mind). Notably, bans on development in fragile

prone habitation by fiat is not, however, a viable solution to the long term problem of flooding, for a host of reasons. Perhaps most obviously, it would require the forced abandonment of enormous portions of the country, where millions of people live and work.[188]

Even if it were politically or legally feasible, the forced, permanent evacuation of flood zones would not be a desirable or efficient response to the problem of flood risk. Flood zones contain many billions of dollars worth of real estate, comprising an untold number of beloved homes and successful businesses.[189] While the costs associated with flood damage can be staggering, it is wrong to assume that they always outweigh the benefits derived by property owners. Consider, as a simplistic example, a fisherman who lives and works in an exposed coastal area. If he earns a profit of $100,000 every year by living and working there, it will only make sense for him to abandon the coast and move inland if he calculates his flood risk at more than $100,000 per year. In other words, as long as the fisherman's flood insurance premiums are less than the benefit he derives from his flood-prone property, he'll choose to stay.

Human beings are not purely rational actors, and flooding has the nasty tendency to overwhelm even the most well-reasoned analyses of its risks. Calculations of the expected "cost" of a flood are also not capable of capturing the tragic loss of a life, or a thousand. Still, it is both reasonable and desirable to allow people to weigh for themselves the costs and benefits of exposure to some degree of disaster risk. It is a mistake to think that flood damage must be avoided at all costs, because it is in many cases perfectly rational to accept the costs of flooding and continue to own property in a flood-prone area.[190] Exposure to flood risk should be discouraged, but only

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coastal zones like that discussed in *Lucas* are usually motivated by conservation rather than avoiding flood risk. *See id.* at 1009-10.

188. Under current takings jurisprudence, government would also be required to compensate property owners for this type of eviction, making it prohibitively expensive. *See* John R. Nolan, *Land Use and Climate Change: Lawyers Negotiating Above Regulation*, 78 BROOKLYN L. REV. 521 (2013) (discussing takings clause obstacles to preventing development in flood prone areas).

189. Approximately 123.3 million people lived in coastal shoreline counties as of 2010, roughly half the U.S. population. Ernest B. Abbott, *Flood Insurance and Climate Change: Rising Sea Levels Challenge the NFIP*, 26 Fordham Envtl. L. Rev. 10, 10-11 (2014).

190. Oil companies, which can be relied upon to be more calculating than the average person when it comes to cost/benefit analyses, provide a handy illustration.

to an efficient degree. Mandatory flood insurance is an excellent way of doing this, and would have salutary effects at the individual, local, and national levels.

1. Individual Effects

Forcing property owners to pay premiums at actuarial rates presents them with an annualized estimate of the costs associated with the flood risk they face, and allows them to consider whether those costs are outweighed by the benefits they derive from their property. As Biggert-Waters ushered in increases in the premiums paid by many policyholders, it created a kind of natural experiment for examining how this mechanism works in the real world. In innumerable news stories from the local papers in flood-prone areas, homeowners reported being "priced out" of their homes by rising flood insurance premiums.[191] In many cases, a direct impact was felt in the real estate market, as the knowledge that ownership of a property would carry with it a bill for thousands of dollars in flood

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Of the 4,000 platforms in the Gulf, 31 were severely damaged and 109 were completely destroyed by Hurricanes Katrina and Rita. Ninety-one percent of the area's oil production capacity was knocked offline, and BP, to pick one example, reported that the two hurricanes had cost it $700 million. *See* Heather Timmons & Vikas Bajaj, *BP Details its Damages from Hurricanes*, N.Y. TIMES, Oct. 5, 2005, at C5. It's not hard to put a price on the amount of oil still left underground, though, and to realize that making repairs and reopening is the right decision. *See* Jad Mouawad & Barry Meier, *Risk-Taking Rises as Oil Rigs in Gulf Drill Deeper*, N.Y. TIMES, Aug. 30, 2010, at A1 (reporting increased investment in offshore platforms). For a more prosaic example, *see* Nick Malawskey, *Riverside Artist, 83, Says Flood Insurance Rates are Part of the Cost of the View*, PATRIOT-NEWS (Harrisburg, PA), Jan. 24, 2014, *available at* http://www.pennlive.com/midstate/index.ssf/2014/01/flood_insurance_homeowners_sto.html (reporting elderly resident of flood-prone house next to Susquehanna River's decision to accept higher premiums and remain in her home).

191. *See*, *e.g.*, Editorial, *Nation's Flood Insurance Program Still Broken*, N.J. STAR-LEDGER, March 19, 2014; Jordan Blum, *House Passes Flood Insurance Rate Delay as Part of Budget Bill*, THE ADVOCATE (Baton Rouge), January 18, 2014; Jenny Anderson, *Outrage as Homeowners Prepare for Substantially Higher Flood Insurance Rates*, N.Y. TIMES, July 28, 2013, at A12; *see also* Abbot, *supra* note 189, at 54 ("The ironic result of the [Biggert-Waters] increases was that a program designed to protect homeowners from losing their homes due to the *possibility* of *future* flooding instead threatened homeowners with the *probability* of losing their homes due to foreclosure well before any floodwaters arrived.").

insurance premiums had its impact on prices.[192] This reaction proves that it's not federal flood insurance itself that creates a moral hazard, it's subsidized premiums.

The fallout over Biggert-Waters highlights another key feature of flood insurance premiums as a mechanism for discouraging risky development: their effects are felt *ex-ante*. Without flood insurance, the costs of flood damage are borne by property owners only after floods occur (and then only if they do not receive some other form of aid). Flood insurance premiums annualize and internalize the costs of flooding before any flood occurs, allowing – forcing, even – homeowners to account for and react to their flood risk before they are flooded. This feature heightens the ability of flood insurance to deter risky development before its risks are realized, and before homes are actually flooded.

In this sense, flood insurance has the ability to function something like a zoning system. Like zoning, flood insurance regulates land use (in that it discourages certain types of construction) in certain geographic areas (in that purchasing it would be mandatory in those areas). Unlike zoning, however, flood insurance functions by imposing burdens in the form of annual premiums on certain conduct. Where the typical zoning scheme simply mandates that certain properties be put to certain uses, flood insurance functions as an incentive system, discouraging rather than forbidding certain activities.[193] In this sense flood insurance functions more like a common-law nuisance system, with its fine-grained ability to allocate burdens and discourage behavior efficiently rather than outlawing behavior categorically. Unlike nuisance, though, flood insurance functions ex-ante and doesn't require costly individual adjudication.

It is unreasonable to think that people are capable of performing this kind of analysis without being required to pay flood insurance

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192. *See supra* note 160.

193. Critics of the currently byzantine zoning systems in place in many American cities have pointed out that zoning could be made both more equitable and more flexible if it imposed costs on certain activities rather than outlawing them while making variances and exemptions available to the politically connected. One scholar, for instance, proposes a tax on certain land uses that aims to capture the externalities created by those uses, thereby encouraging favored uses while discouraging others to varying degrees. *See* Stewart E. Sterk, *Exploring Taxation as a Substitute for Overregulation in the Development Process*, 78 BROOKLYN L. REV. 417, 431-34 (2013).

premiums. Individuals' ability to account for and prepare for remote yet potentially catastrophic risks is impaired by a series of much-studied cognitive biases. First, and perhaps most damning, is individuals' general inability to accurately estimate the probability of particular hazards.[194] Certain risks, like the possibility of being harmed by violent crime, are usually overestimated, while others are routinely underestimated.[195] Social scientists have noticed that perceptions of the likelihood of disasters tend to spike just after disasters occur and then quickly recede.[196] One common explanation is that perceptions of unlikely but catastrophic risk are subject to a kind of recall bias. Risks that are easily called to mind, whether because they frequently appear in the evening news or because they recently occurred, loom large, while risks that have faded from consciousness are underappreciated.[197] Indeed, this effect can be traced in the rates at which people purchase flood insurance, which are highly correlated with whether they have experienced flood losses in the previous year.[198] That this is not surprising speaks to the power of our bias favoring reaction to yesterday's news.

Perhaps equally distorting is the tendency to believe that the overall statistical likelihood of an event should be represented over short time periods, or conversely, that occurrences over small sample periods can be extrapolated far into the future. Note, for example, that if you toss a coin four times, getting two heads and two tails is the most likely outcome, and yet will happen only 37.5% of the

194. *See* Robert J. Meyer, *Why We Under-Prepare for Hazards*, *in* ON RISK AND DISASTER: LESSONS FROM HURRICANE KATRINA 153, 158 (Ronald J. Daniels, Donald F. Kettl, & Howard Kunreuther, eds., 2006).

195. *Id.* at 158-59 (citing Jennifer S. Lerner, et al., *Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment*, 14 J. OF PSYCHOLOGICAL SCIENCE 144 (2003) (this study asked a sample of 973 Americans what they thought was the probability that they would be harmed by violent crime in the coming year. The mean answer was 43%, just under the mean estimate of how likely they were to contract the flu, 47%.).

196. Jerry M. Burger & Michele L. Palmer, *Changes in and Generalization of Unrealistic Optimism Following Experiences with Stressful Events: Reactions to the 1989 California Earthquake*, 18 PERSONALITY AND SOCIAL PSYCHOLOGY BULLETIN 39 (1992).

197. Meyer, *supra* note 194, at 159.

198. Mark J. Browne & Robert E. Hoyt, *The Demand for Flood Insurance: Empirical Evidence*, 20 J. OF RISK AND UNCERTAINTY 291, 291 (2000).

time.[199] It is a common human intuition, perhaps borne of our tendency to learn by trial and error, to believe that recent experience is a fair guide to the future.[200] When it comes to irregularly spaced events like floods, this just isn't so. To take but one example, South Florida was directly hit by 27 hurricanes between 1887 and 1969, an average of about one every three years.[201] And yet in the 21 years between 1970 and the arrival of Hurricane Andrew in 1992, only two hurricanes hit the region. During this lull, development in the area exploded, with catastrophic results.[202] Hurricane Andrew caused roughly $16 billion in losses,[203] much of which was attributed to recent coastal development.[204]

Beyond hindering our ability to accurately estimate our risk of flood, cognitive biases can prevent us from taking purely rational measures to protect against that risk. One of the most important biases at work here is our tendency to overvalue immediate, certain costs and undervalue long-term, uncertain benefits.[205] Many scholars who study these problems focus on the troubling failure of individuals to take fairly simple, low-cost actions like complying

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199. Meyer, *supra* note 194, at 160.

200. Meyer explains several other ways in which trial-and-error learning hampers our ability to make rational decisions in the face of disasters. People tend to react to their most recent experience. For instance, many people decided not to evacuate before the arrival of Hurricane Katrina in 2005 because evacuating for Hurricane Ivan in 2004 had proved time-consuming, costly, and pointless. Meyer points out that this type of reactive behavior creates a "censoring bias," in which prudent preparations that keep individuals out of harm's way tend to be self-defeating, because by averting the harm people are more likely to underestimate the magnitude of the hazard they faced. *See id.* at 156; *see also* Robert J. Meyer, *Failing to Learn from Experience about Catastrophes: The Case of Hurricane Preparedness*, 45 J. OF RISK AND UNCERTAINTY 25, 26-27 (2012) (reporting experimental findings demonstrating that "the tendency to reduce investments in protection given the absence of past losses is observed regardless of whether the reason for this absence was the lack of a storm event or the presence of past mitigation").

201. Meyer, *supra* note 194, at 160.

202. *Id.*

203. Burby, *supra* note 20, at 178.

204. Meyer, *supra* note 194, at 160.

205. *See* Ted O'Donoghue & Matthew Rabin, *Doing it Now or Later*, 89 AM. ECON. REV.103, 103 (1999) (examining "human tendency to grab immediate rewards and to avoid immediate costs"); *see also* Ted O'Donoghue & Matthew Rabin, *Choice and Procrastination*, 116 QUARTERLY J. OF ECON. 121 (2001).

with mandatory evacuation orders in the face of oncoming hurricanes. This cognitive bias is even more pronounced in the context relevant here.[206] Choosing to live farther away from a job or loved ones to avoid a risk of flood, or choosing to spend many thousands of dollars elevating or otherwise flood-proofing one's home, requires making significant and immediate personal sacrifices to account for a risk that is often very distant and uncertain.

Mandatory flood insurance would reduce the impact of these biases in a number of ways. First, as noted previously, flood insurance smooths out the cost of flooding over time, taking immensely costly, rare events and distributing their costs into smaller payments that come due every year. One's susceptibility to the various cognitive biases discussed above becomes irrelevant; premiums must be paid. Changing the way the costs of flooding are felt also removes flood risk from the realm of long term costs (which are underestimated) and places them firmly in the realm of immediate, certain costs (which tend to elicit an overreaction). And by offering reduced premiums in exchange for individual mitigation efforts (which the NFIP already does), flood insurance offers immediate rewards in exchange for immediate costs, a trade people stand a much greater chance of making. As the reaction to Biggert-Waters demonstrated, these changes have the power to influence individual decisions. The effect of simply informing individuals that an area faces a high risk of flood has been less pronounced.

2. Local Effects

An individual mandate for flood insurance would also strengthen the pressure on local governments to confront their communities' flood risk and take measures to mitigate it. Despite the fact that flood losses are felt most keenly on a local level, local governments have proved particularly inept when it comes to adopting and enforcing mitigation measures.[207] This has been referred to as the "local government paradox," and examples of its power abound.[208]

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206. Meyer, *supra* note 194, at 165 (noting that this bias is "particularly acute" "[w]hen making a choice between a current or delayed mitigation investment").

207. Burby, *supra* note 20, at 178 (noting that "virtually no local governments in the United States had adopted building or zoning regulations to mitigate flood losses" before they were required to do so in order to participate in the NFIP).

208. *Id.* at 178-81; *see supra* notes 75-78 and accompanying text.

Mandatory flood insurance would do much to drag flood risk into prominence as a local political issue. To some extent the fallout from Biggert-Waters, and the rapidity with which it was virtually repealed, provide a handy demonstration, as politicians rushed to co-sponsor the legislation that became the Homeowner Flood Insurance Affordability Act of 2014.[209] The efficacy of the Community Rating System, which coaxes municipalities into adopting measures that help reduce their flood risk, depends in large part on the degree of pressure it can place on local governments.[210] The more salient flood insurance premiums become as a local political issue, the more local governments will choose to enact stricter building codes and take other measures that reduce premiums for the entire community. By requiring more people to participate in the program, an individual mandate for flood insurance would increase the pressure on local governments to mitigate their flood risk.[211]

3. National Effects

A stronger NFIP would also lessen the pressure on Congress to provide massive, one-off relief packages in the wake of major floods. The National Research Council's report to the Army Corps of Engineers on flood risks along the East and Gulf Coasts made this point forcefully. The federal government's tendency to shoulder the burden of paying for flood recovery, the report noted, "leads to inefficiencies and inappropriate incentives that serve to increase the nation's exposure to risk."[212] The report referred to this "misalignment of risks" as "[a] major impediment to U.S. coastal hazard management."[213]

Shifting the burden of paying for flood losses from Congressional emergency appropriations to the NFIP would do much to alleviate this problem. There are already signs that the felt need for

209. The act had 238 cosponsors.

210. *See supra* notes 88-92 and accompanying text.

211. Indeed, the National Research Council's report on coastal risk argued that mitigation measures have been an underutilized tool in reducing the harms associated with coastal floods, and cited the need for stronger incentives for local governments to participate in the Community Rating System, particularly in light of the significant demonstrated reduction in risk associated with that participation. *See supra* note 5, at 89.

212. NATIONAL RESEARCH COUNCIL, *supra* note 5, at 3.

213. *Id.* at 55.

emergency funding is sensitive to the ability of flood insurance to cover flood damage. The post-Katrina Road Home program provided aid only for losses not covered by insurance, and imposed a penalty on those who were required to have flood insurance but did not.[214] The manner in which Congress reacts to floods carries its own message. By treating floods as worthy of massive emergency appropriations, Congress is implicitly treating floods as events that individuals should not be expected to have planned for, events that are unpredictable and extraordinary and whose burden will be shared nationally. Flood insurance premiums, by contrast, carry with them an air of inevitability, and imposing a tax penalty on those who fail to maintain their policies sends a very different signal than a hundred billion dollars in post-disaster aid.

V. CONCLUSION

Dealing with our rising national flood risk is, or should be, a matter of urgency. Federal efforts to confront this problem have, over the course of the past half-century, consisted of large-scale engineering projects, massive post-disaster aid, and flood insurance offered at largely below-market rates. All of these have the unfortunate effect of shifting the burden of flood risk from those who live in flood zones to the country as a whole, thereby making coastal living more attractive than it should be. Individually-mandated flood insurance with premiums set at actuarial levels could be a key tool in placing the burden of flood risk back where it belongs, on those who are directly affected by floods, while still providing a safety net in case of disaster. Notably, however, mandatory flood insurance would impose these costs before flood risks are realized, allowing us to decide individually one of the most important questions we face collectively: how much risk are we willing to accept?

214. *See supra* note 180 and accompanying text.