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LEGAL TOOLS FOR CLIMATE ADAPTATION ADVOCACY:

Flood Insurance

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1. INTRODUCTION

Flooding is the most common and costly form of nature's wrath.[1] On average, flooding causes $50 billion in economic losses each year in the United States.[2] Worse yet, damage and the associated costs are likely to rise as the climate changes and sea levels rise. Many areas will experience increased flood risk, but coastal areas are the most likely to feel dramatic effects.[3] "Virtually certain" sea level rise[4] will lead to greater storm surge (the rise in water level above normal tidal variation[5]), which will exacerbate coastal flooding. Many of these impacts are already being observed; for example, "the height of a 50-year flood event[6] has increased anywhere from 2 to more than 10 cm per decade since 1970."[7]

The federal government has attempted to address flooding through an insurance program aimed at effectively providing relief to those whose property is damaged by flooding and at incentivizing sound risk management. However, the federal insurance program subsidizes flood insurance premiums, and, therefore, does not require property owners to internalize the costs of living in a flood prone area. In practice, the federal insurance program shifts much of the costs of flood damage to the government and taxpayers in general. Though there have been recent efforts to address the dangers of flooding, particularly in light of the increasing risk of climate change driven flooding, political pressures have robbed these measures of their effectiveness.

If thoughtfully redesigned, the flood insurance regime could be a powerful tool for encouraging sensible coastal land use as we confront the increased danger that climate change poses to these areas. As sea levels rise and storms become more frequent and severe, damage from flooding will increase. A properly constructed insurance regime would ensure that the people affected by this increased flooding pay appropriate insurance premiums. Moreover, such a regime would discourage excess development in flood-prone areas in the first place.

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[1] Insurance Information Institute, *Flood Insurance* (April 2015), *available at* http://www.iii.org/issue-update/flood-insurance.
[2] *Id.*
[3] *See* 2012: MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CLIMATE CHANGE ADAPTATION. A SPECIAL REPORT OF WORKING GROUPS I AND II OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 175-86, *available at* http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf
[4] IPCC, 2013: OBSERVATIONS: OCEAN. IN: CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 290-91, *available at* http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter03_FINAL.pdf
[5] *Introduction to Storm Surge*, NOAA, *available at* http://www.nws.noaa.gov/om/hurricane/resources/surge_intro.pdf
[6] A 50-year flood event is defined as a flood event with a 2% chance of occurrence in any given year.
[7] IPCC, *supra* note 4.

This paper[8] will begin by exploring the impact that climate change will have on flooding before turning to a description of the National Flood Insurance Program (NFIP), the principle focus of this paper. The paper will provide details on the operation and functions of the NFIP and then discuss the ways the regime discourages adaptation to climate change. Finally, the paper will conclude with suggestions for how readers can promote climate change adaptation by advocating for changes to the NFIP.

2. BACKGROUND: FLOODING AND CLIMATE CHANGE

Flooding, as defined in a standard flood insurance policy, covers a wide range of events. FEMA regulations define flooding as "[a] general and temporary condition of partial or complete inundation of normally dry land areas from: (1) [t]he overflow of inland or tidal waters[,] (2) [t]he unusual and rapid accumulation or runoff of surface waters from any source[, or] (3) [m]udslides (i.e. mudflows)."[9]

A warmer climate, which will likely result in increased climate variability, will increase the risk of flooding, although not uniformly.[10] While it is difficult to predict how climate change will affect certain types of floods, such as river floods,[11] for other types of floods there is greater certainty that climate change will increase both their frequency and their magnitude.[12] Floods that are closely tied to heavy precipitation events, such as flash floods and urban floods, are among the types considered likely to increase.[13]

Flooding in coastal areas is also exacerbated by sea level rise. Global average sea level has increased by 8 inches in the past century, and it is projected to rise another 1 to 4 feet by 2100.[14] Moreover, evidence suggests that sea level rise is accelerating.[15] Since 1992, the rate of global sea level rise has been roughly twice the rate observed over the last century.[16] It is also important to note that sea level rise is not occurring

[8] This paper is one in a series. Other currently published papers in the series are: Nina Hart, *Legal Tools For Climate Adaptation Advocacy: Securities Law*, Sabin Center For Climate Change Law (2015), *available at* http://web.law.columbia.edu/sites/default/files/microsites/climate-change/adaptationhandbook_securitieslaw.pdf; and Jennifer Klein and Ethan Strell, *Legal Tools For Climate Adaptation Advocacy: NEPA*, Sabin Center For Climate Change Law (2015), *available at* http://web.law.columbia.edu/sites/default/files/microsites/climate-change/adaptation_handbook_nepa_final.pdf.

[9] FEMA, ANSWERS TO QUESTIONS ABOUT THE NFIP 2 (2009), *available at* http://www.fema.gov/media-library-data/20130726-1438-20490-1905/f084_atq_11aug11.pdf [hereinafter FEMA Answers]; 44 C.F.R. § 59.1.

[10] Intergovernmental Panel on Climate Change, 3.4.3 FLOODS AND DROUGHTS, *available at* https://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch3s3-4-3.html.

[11] U.S. Global Change Research Program, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: U.S. NATIONAL CLIMATE ASSESSMENT 75, *available at* http://nca2014.globalchange.gov/downloads; Intergovernmental Panel on Climate Change, FRESHWATER RESOURCES. IN: CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL 247, *available at* https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap3_FINAL.pdf.

[12] U.S. Global Change Research Program, *supra* note 11.

[13] *Id.*

[14] *Id.* at 9.

[15] *Id.*

[16] *Id.*

uniformly across the world. In the United States, the East Coast and Gulf Coast are experiencing the greatest rise; for example, sea level in Galveston, Texas rose more than a foot between 1963 and 2012.[17]

Combined with more frequent and extreme storms, sea level rise is causing unprecedented levels of damage from flooding.[18] Climate change related flooding is already having massive and devastating effects in terms of both lives and dollars. Recent newsworthy storms provide a salient illustration of these impacts:

> Prior to Tropical Storm Allison in 2001, the National Flood Insurance Program had never experienced a storm resulting in over $1 billion in damage. Since then, however, Hurricane Katrina imposed a death toll estimated to range from just under 1,000 to nearly 2,000 and caused an estimated $148 billion in total damages and costs; Hurricane Irene in 2010 caused 45 deaths and $10.1 billion in total damages and costs; and Superstorm Sandy in 2012 resulted in 159 deaths and $65.7 billion in total damages and costs. There is no reason to think that these mounting damages from storms are aberrations.[19]

3. THE NATIONAL FLOOD INSURANCE PROGRAM

The government has taken many approaches in attempts to reduce the impact of flooding events.[20] The first attempts involved the construction of dams and levees to control rising water.[21] After failing to fully control the danger with infrastructure, in 1968 Congress passed the National Flood Insurance Act (the Act). The Federal Insurance and Mitigation Administration (FIMA) manages the act under the direction of the Federal Emergency Management Agency (FEMA), which is an agency within the Department of Homeland Security.[22] The Act was passed in response to increasing flood losses, for which the government had to bear much of the cost of responding through disaster relief spending.[23] The legislation sought to control those costs through community floodplain management ordinances and by protecting property with an insurance mechanism based on payment of premiums.[24]

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[17] *Science Connections: Sea Level Rise and Global Warming*, Union of Concerned Scientists (2014), *available at* http://www.ucsusa.org/global_warming/science_and_impacts/impacts/infographic-sea-level-rise-global-warming.html#.VVE6yNpViko.
[18] Intergovernmental Panel on Climate Change, *supra* note 10, at 370.
[19] Sarah Fox, *This is Adaptation: The Elimination of Subsidies Under the National Flood Insurance Program*, 39 Colum. J. Envtl. L. 205, 206-07 (2014).
[20] Insurance Information Institute, *supra* note 1.
[21] *Id.*
[22] Fox, *supra* note 19, at 214.
[23] 42 U.S.C. §§ 4001-02 (2014).
[24] *Id.*

3.1 Community Floodplain Management

The NFIP's community floodplain management requirements are intended to ensure that communities covered by the program are committed to regulating and controlling future development of the floodplain.[25] To participate in the insurance aspect of the program, a building must be part of a community that participates in the program.[26] FEMA regulations define a community as "any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or Alaska Native village or authorized native organization, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction."[27] To qualify for flood insurance, a community submits an application to FEMA containing, among other things, "legislative and executive actions indicating a local need for flood insurance and an explicit desire to participate in the National Flood Insurance Program" as well as statistical information and commitments to meet FEMA minimum flood control requirements.[28]

Communities may participate in the flood insurance program only if they complete an application, adopt a resolution of intent to participate and cooperate with FEMA, and adopt and submit a floodplain management ordinance that meets or exceeds the minimum NFIP criteria by controlling floodplain development to account for the dangers of flooding, mudslides, and erosion.[29] Only those communities that have agreed to adopt and enforce land use and flood control measures consistent with federal floodplain management regulations may access NFIP insurance.[30] FEMA requires community participation since the careless building practices of some could nullify the efforts of others to responsibly manage their flood risk.[31] A community that adopts flood prevention measures exceeding FEMA's requirements can participate in FEMA's Community Rating System (CRS). This incentives-based system rates communities' flood prevention measures and, based on those ratings, provides community-wide discounts up to 45% of premiums.[32]

3.2 Insurance

Standard private homeowner and renters' insurance policies do not cover flood related damage, nor do most commercial policies.[33] As a result, before the NFIP was created, the government bore the cost of flood damage to people's homes through disaster relief payments.[34] The NFIP sought to reduce the financial

[25] FLOODPLAIN MANAGEMENT REQUIREMENTS: A STUDY GUIDE AND DESK REFERENCE FOR LOCAL OFFICIALS, FEMA, February 2005, *available at* http://www.floods.org/ace-files/documentlibrary/CFM-Exam/FEMA_480_Complete.pdf.
[26] Fox, *supra* note 19, at 215; *see also* FEMA Answers, *supra* note 9.
[27] 44 C.F.R. §§ 59.1, 64.2.
[28] 44 C.F.R. § 59.22.
[29] Fox, *supra* note 19, at 215; *see also* FEMA Answers, *supra* note 9, at 4; 44 C.F.R. §§ 59.22(a)(3), 60.3-60.5.
[30] Fox, *supra* note 19, at 215; *see also* FEMA Answers, *supra* note 9, at 4; 44 C.F.R. § 59.22.
[31] FEMA Answers, *supra* note 9, at 4.
[32] Fox, *supra* note 19, at 215; *see also* 42 U.S.C. § 4022 (2014).
[33] Insurance Information Institute, *supra* note 1.
[34] 42 U.S.C. §§ 4001-02 (2014).

burden on taxpayers by creating a pool of money to pay for rebuilding after flooding.[35] This pool of money, as with other types of insurance, is funded by the premiums paid by those covered by the program.[36] Through this extensive program, the federal government is currently responsible for over five million policies.[37] The government insures more than $1.2 trillion in assets, including $527 billion in property value.[38]

Flood insurance covers a variety of phenomena resulting in direct physical losses "by flood."[39] These include erosion caused by waves or currents of water actively exceeding anticipated cyclical levels, or caused by severe storm, flash flood, abnormal tidal surge, or mudflows.[40] Other causes that may be included are heavy or prolonged rain, snowmelt, blocked storm drainage systems, and levee or dam failure.[41]

3.2.1 Premium Determinations

FIMA uses detailed hydrologic and hydraulic analyses from the Department of Agriculture's Natural Resources Conservation Service to perform Flood Insurance Studies (FISs) to determine premiums.[42] The FISs form the basis of Flood Insurance Rate Maps (FIRMs), which are maps of the community that designate, along with other hazards such as mudslides, zones subject to the "base flood."[43] The base flood, also known as the "100-year flood", is the flood that has a 1% chance of being equaled or exceeded each year based on historic data.[44] Areas subject to flooding by the 100-year flood are known as Special Flood Hazard Areas (SFHAs).[45] SFHA designation has important consequences. It represents a

> reasonable compromise between the need for building restrictions to minimize potential loss of life and property and the economic benefits to be derived from floodplain development. Development may take place within an SFHA, provided that development complies with local floodplain management ordinances, which must meet the minimum Federal requirements. Flood insurance is required for insurable structures within high-risk areas to protect Federal financial investments and assistance used for acquisition and/or construction purposes within communities participating in the NFIP.[46]

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[35] 42 U.S.C. §§ 4001-02.
[36] 42 U.S.C. §§ 4001-02.
[37] FEMA, *Policies in Force by Month*, *available at* http://www.fema.gov/policies-force-month.
[38] FEMA, *Insurance in Force by Month*, *available at* http://www.fema.gov/insurance-force-month; Kristan Uhlenbrock, *Despite Hazard of Sea Level Rise, Senate Halts Flood Insurance Reform* (January 31, 2014), *available at* http://thinkprogress.org/climate/2014/01/31/3230141/senate-flood-insurance/.
[39] FEMA Answers, *supra* note 9, at 19; FEMA, DWELLING FORM: STANDARD FLOOD INSURANCE POLICY 1 (2014).
[40] FEMA Answers, *supra* note 9, at 19.
[41] Insurance Information Institute, *supra* note 1.
[42] Fox, *supra* note 19, at 215; 7 C.F.R. § 621.45 (2015); 44 C.F.R. § 64.3 (2015).
[43] 44 C.F.R. § 64.3(a)(1) (2015).
[44] *Id.* § 59.1.
[45] *Id.*
[46] FEMA Answers, *supra* note 9, at 2.

3.2.2 Policy Issuers

Originally NFIP insurance was only available directly from the federal program. In 1983, however, FEMA promulgated regulations authorizing the "Write Your Own (WYO)" program, which allows the Federal Insurance Administrator to "enter into arrangements with individual private sector property insurance companies or other insurers…under their own property business lines of insurance…."[47] In effect, WYO allows FEMA to use private resources to deliver the benefits of the NFIP.

Private insurance companies operating within the WYO program provide coverage as specified in the Standard Flood Insurance Policy, including the NFIP's monetary limits on coverage.[48] The Federal Treasury pays the claims made under this program,[49] and insurers are given an expense allowance to cover their expenditures in writing policies and processing claims.[50] While some policies have become available without federal backing on the private market, most policies today originate through the WYO program.[51] The average premium is $650 per year but can be much higher.[52] A number of factors affect the level at which premiums are set, including "the amount of coverage purchased; the deductible amount selected; the flood zone; location; age of the building; building occupancy; and design of the building (foundation type)."[53]

3.2.3 Coverage

These premiums provide coverage for up to $250,000 in damages to residential buildings, capped at the building's replacement cost, or the amount it would cost to rebuild the structure as it was before the damage.[54] The standard insurance policy covers $100,000 of damage to home contents.[55] Notably there are limitations to the coverage for basements and their contents.[56] Excess flood insurance is available from private insurers for those who desire additional coverage.[57] For commercial buildings, the NFIP is limited to $500,000 for the structure and another $500,000 for the contents.[58]

Coverage does not take effect immediately after enrollment. To ensure that people do not delay purchasing insurance until flooding is imminent, there is a 30-day waiting period before a purchased policy

[47] 44 C.F.R. § 62.23 (2015); 42 U.S.C. § 4081 (2014).
[48] 44 C.F.R. § 62.23(c).
[49] 44 C.F.R. Pt. 62, App. A, Article I (2015); *Norman v. Fid. Nat. Ins. Co.*, 354 F. App'x 934, n. 2 (5th Cir. 2009); FEMA Answers, *supra* note 9, at 3.
[50] 44 C.F.R. Pt. 62, App. A, Article III (2015); *Norman v. Fid. Nat. Ins. Co.*, 354 F. App'x 934, n. 2 (5th Cir. 2009); FEMA Answers, *supra* note 9, at 3.
[51] Insurance Information Institute, *supra* note 1.
[52] Ann Carrns, *Federal Flood Insurance Premiums for Homeowners Rise*, New York Times, April 2, 2015, *available at* http://www.nytimes.com/2015/04/03/your-money/federal-flood-insurance-premiums-for-homeowners-rise-as-much-as-25-percent.html?_r=0.
[53] FEMA Answers, *supra* note 9, at 11.
[54] 44 C.F.R. § 61.6 (2015).
[55] 44 C.F.R. § 61.6.
[56] *See e.g.* FEMA, DWELLING FORM: STANDARD FLOOD INSURANCE POLICY 9-10, *supra* note 39.
[57] Insurance Information Institute, *supra* note 1.
[58] 44 C.F.R. § 61.6 (2015).

takes effect.[59] Without such a policy, claims would greatly exceed premiums. For example, in 1993, 7,800 policies purchased at the last moment before a severe flood generated claims of $48 million, while only $625,000 had been paid in premiums.[60]

4. PROBLEMS WITH THE NFIP

4.1 Subsidized Rates and Insolvency

The two-pronged approach taken by the NFIP was intended to reduce the burden on the public coffers caused by flood related damage.[61] However, premiums paid to support the program have been insufficient to cover payments made to compensate for losses.[62] In large part this is a result of subsidies many buildings receive on their premiums.[63] Premium discounts are given to owners of structures built before FEMA mapped the flood areas as well as to several categories of homeowners.[64] In 2013, roughly 20% of policies received premium discounts worth 55-60% of full risk policies.[65] These discounts were driven by fears that high premiums would dissuade communities from seeking coverage or cause them to abandon economically viable buildings.[66] FEMA conducts an annual Actuarial Rate Review, which attempts to ascertain if the programs' rate structure is "fiscally sound."[67] The 2011 review concluded that, because of discounted premium rates, "it is currently impractical for the NFIP to be actuarially sound in the aggregate."[68] Though the program has undergone several changes recently, as will be discussed below, the program remains on unsustainable fiscal footing.

Several factors compound this fiscal insolvency. First, the premiums do not reflect the actual risk of loss, but instead reflect the "hydrologic method[69] of estimating flood damage risk."[70] This model is supposed to

[59] 42 U.S.C. § 4013(C)(1) (2014).
[60] Insurance Information Institute, *supra* note 1.
[61] 42 U.S.C. §§ 4001-02 (2014).
[62] Fox, *supra* note 19, at 217 (citing Carolyn Kousky & Howard Kunreuther, Res. for the Future & Wharton Risk Mgmt. & Decision Processes Ctr., Issue Brief 13-02, Addressing Affordability in the National Flood Insurance Program 3 (2013), *available at* http://www.rff.org/rff/documents/RFF-IB-13-02.pdf).
[63] *Id.*
[64] Carolyn Kousky & Howard Kunreuther, Res. for the Future & Wharton Risk Mgmt. & Decision Processes Ctr., Issue Brief 13-02, Addressing Affordability in the National Flood Insurance Program 3 (2013), *available at* http://www.rff.org/rff/documents/RFF-IB-13-02.pdf.
[65] *Id*.
[66] Fox, *supra* note 19, at 217.
[67] Thomas L. Hayes & D. Andrew Neal, Fed. Emergency Mgmt. Agency, Nat'l Flood Ins. Program, Actuarial Rate Review: In Support of the Recommended October 1, 2011, Rate and Rule Changes 1 (2011), *available at* http:// www.fema.gov/media-librarydata/20130726-1809-25045-6893/actuarial_rate_ review2011.pdf.
[68] *Id.* at 5.
[69] The hydrologic model, or hydrologic method of ratemaking, is the model FIMA uses, incorporating actuarial and hydrologic data, to predict insurance rates. It was first outlined in the 1966 U.S. Department of Housing and Urban Development (HUD) report Insurance and Other Programs for Financial Assistance to Flood Victims. Hayes, *supra* note 67.

cover at least the "historic average loss year,"[71] calculated by averaging the amount of damage in all previous years. Thus, when extreme storms cause record-setting damages, the historic average should rise, thereby increasing the premiums required to cover the expected losses.[72] Premium increases sufficient to keep the NFIP solvent have, however, proved politically unsupportable.[73] Therefore, the cost of recent extreme flooding events, including those caused by Hurricane Katrina and other severe storms, has not been fully factored in to the historic average loss year and is not adequately reflected in current premium rates.[74] Moreover, Congress withheld from FEMA permission to account for the effects of climate change and related phenomena in its risk maps despite the development of scientific models predicting climate change impacts.[75] Instead, rates are determined by incomplete historical data and ignore the future effects of rising sea levels.[76]

Consequently, the NFIP paid out more in claims following Hurricane Katrina than it had over the entire span of the program up to that point.[77] With insufficient funds to cover these costs, Congress was forced to raise FEMA's borrowing authority to $20.775 billion.[78] Congress again raised FEMA's borrowing limit, this time to $30 billion, in the wake of Hurricane Sandy.[79]

4.2 High Risk Development

Damage from flooding is rising in part due to increased development and property values within the floodplain. As extreme storm events are becoming more frequent, coastal communities are undergoing rapid growth.[80] Between 1970 and 2010, the population living in coastal watershed areas exploded by 45% or 50.9 million people.[81] The presence of valuable property directly in the paths of these devastating storms has increased the amount of damage caused by such storms. Indeed, coastal development has swelled in the last few decades due to the NFIP and other regimes that incentivize and subsidize development along coastlines and in floodplains.[82]

Through the Flood Disaster Protection Act of 1973, Congress acknowledged that federally funded insurance and other federal financial incentives are often "determining factors in the utilization of land."[83] It also took notice of "accelerating development of, and concentration of population in, areas of flood and

[70] Fox, *supra* note 19, at 217.
[71] *Id.*
[72] *Id.* at 218.
[73] *Id.*
[74] *Id.*
[75] J. Peter Byrne, The Cathedral Engulfed: Sea-Level Rise, Property Rights, and Time, 73 La. L. Rev. 69, 118 (2012).
[76] Fox, *supra* note 19, at 218.
[77] Kousky, *supra* note 64, at 3.
[78] *Id.*
[79] Fox, *supra* note 19, at 218.
[80] Fox, *supra* note 19, at 206.
[81] Fox, *supra* note 19, at 222.
[82] Fox, *supra* note 19, at 208.
[83] 42 U.S.C. 4002(a)(2).

mudslide hazards."[84] These two observations summarize the perverse incentives the current NFIP creates. People considering moving into flood-prone areas determine that they can safely do so because the risks associated with those areas are offset by federally funded insurance. As a result, increasing numbers of people move into those areas. The problem arises because the insurance regime is not able to cover the costs of damage suffered by people moving into those areas, since premiums are insufficient to cover the risk. Worse yet, the costs associated with flooding are increasing dramatically with climate change.[85] Consequently, while deaths from other natural disasters are declining, fatalities caused by flooding are increasing.[86]

4.3 Political Failure

In 2012 Congress appeared poised to confront a host of issues facing the NFIP. The Biggert-Waters Flood Insurance Reform Act (Biggert-Waters) of that year extended the NFIP for five years[87] and revised premiums to more accurately reflect flooding risk in an effort to shore up the financial base of the program.[88] Biggert-Waters accomplished this by requiring FEMA to update flood mapping to include projected risks,[89] increase premium rates, and eliminate premium discounts.[90] Biggert-Waters provided for additional funding and updated standards for mapping to account for projected changes due to climate shifts.[91] When these mapping efforts are implemented, they will more accurately account for risk by using data that more realistically reflects the risk of future flooding.[92]

Biggert-Waters also ended the process of grandfathering under which homeowners were able to keep their old premiums despite being classified as higher risk on a new map.[93] Perhaps most significantly, the statute clarified that catastrophic loss years must be included in the calculation of average losses, thus including the costs of storms like Katrina in the calculation.[94] The statute also increased the amount that premiums could be increased annually from 10% to 20%.[95] Additionally, those who had not previously had a policy but were classified into SFHAs by the required mapping updates, including properties purchased

[84] *Id.* at 4002(a)(1).
[85] Kousky, *supra* note 64, at 3.
[86] Fox, *supra* note 19, at 218.
[87] Biggert-Waters Flood Insurance Reform Act of 2012 §100203, Pub. L. No. 112-141, tit. II, subtit. A, 126 Stat. 405, *available at* http://www.philadelphiafed.org/bank-resources/publications/consumer-compliance-outlook/2012/third-quarter/Biggert-Waters%20Act.pdf.
[88] *Id.* at §100205.
[89] *Id.* at §§100215(d)(2).
[90] *Id.* at §§100205, 100207.
[91] *Id.* at §§100215(d)(2), 100216.
[92] Fox, *supra* note 19, at 228.
[93] *Id.* at § 100207.
[94] *Id.* at § 100211(3)(i).
[95] *Id.* at § 100205(c)(2)(B).

after enactment of Biggert-Waters, would face an immediate escalation to premiums reflecting full risk.[96] In sum, Biggert-Waters was designed to ensure that premiums reflected actual flood risks.

Unfortunately, these measures were met by a storm of resistance because of concerns about increased premiums.[97] Certain homes would need to be raised on stilts or take other costly flood-protection measures to avoid these premium hikes. Some feared that people would lose their homes as a result of increased premiums, because federally backed mortgages require the owner to have flood insurance if subject to FEMA determined flooding risk.[98] These objections and others resulted in the Homeowner Flood Insurance Affordability Act of 2014 (Affordability Act), which repealed portions of Biggert-Waters and passed the Senate on a vote of 67 to 32 in a rare act of bipartisanship.[99] The Affordability Act restored grandfathering[100] and lowered the cap on premium increases.[101] It also repealed measures requiring escalation to full risk rates for homeowners who were not previously covered.[102] Additionally, the law required the FEMA administrator to appoint an Advocate to argue for the fair treatment of policyholders.[103] Collectively these measures eliminate or delay many of the Biggert-Waters Act's commendable attempts to reform the NFIP.[104] However, the provisions concerning the consideration of sea level rise in flood mapping survived and remain in effect.

5. HOW THE NFIP COULD BE MADE EFFECTIVE

The question of how to reform flood insurance to promote climate change adaptation is part of a larger debate on how society can fairly change long standing legal regimes that incentivize land use patterns with potentially negative effects. Everything from subsidized crop insurance to water subsidies in drought-prone regions will have to be reevaluated in light of changing climate conditions. Changes to the NFIP raise significant questions of fairness including contractual obligations and constitutional questions regarding regulatory takings. Nonetheless, certain changes remain feasible and necessary.

[96] *Id.* at § 100205(a)(B)(g)(2).
[97] Fox, *supra* note 19, at 230.
[98] Klaus Jacob, THE CASE AGAINST REBUILDING THE COASTLINE AFTER SUPERSTORM SANDY, The Atlantic Citylab (Sept. 12, 2013), *available at* http://www.citylab.com/design/2013/09/case-against-rebuilding-shoreline-after-superstorm-sandy/6869/
[99] Fox, *supra* note 19, at 228; Thomas Ferraro, *U.S. Senate passes bill to delay hikes in flood insurance rates* (January 30, 2014), *available at* http://www.reuters.com/article/2014/01/30/us-usa-insurance-flooding-idUSBREA0T1WK20140130.
[100] Homeowner Flood Insurance Affordability Act of 2014, § 4, PL 113-89, March 21, 2014, 128 Stat 1020.
[101] *Id.* at § 5.
[102] *Id.* at § 3(a).
[103] *Id.* at § 24.
[104] *See* Homeowner Flood Insurance Affordability Act of 2014 § 3(a), *supra* note 100 ("An Act To delay the implementation of certain provisions of the Biggert–Waters Flood Insurance Reform Act of 2012, and for other purposes."); Uhlenbrock, *supra* note 38.

Complete elimination of flood insurance subsidies or even reductions in the level of subsidization would require homeowners to shoulder the risk of building in a flood-prone area. Better decision-making would result if homeowners are required to pay the premiums necessary to support a self-sufficient insurance program, since the higher costs would force homeowners to more thoroughly consider the potential ramifications of living in a high flood risk area. This section explains how the reader can support reformation of the NFIP to promote climate change adaptation. It provides a list of potential reforms and describes pathways for promoting those reforms through congressional and agency processes.

5.1 Possible Reforms

The following reforms to the NFIP would help promote climate change adaptation:[105]

- **Mapping should be protected from political influence.** It is essential that flood risk maps reflect actual flood risk and that risk estimates are not tempered by political considerations. Otherwise, premiums will not be sufficient to cover the amount the NFIP is required to pay those who experience floods.
- **Subsidies should be phased out.** Since subsidies allow people to pay less than the amount required for the program to remain solvent, and because subsidized premiums encourage development in flood prone areas, subsidies must be phased out.
- **Climate Change should be explicitly considered.** Climate change must be included in flood risk calculations by both officials and the public. Thus, extreme storm events and climate change projections should be included in the calculation of premiums.

5.2 Congressional Action

Concerned citizens and organizations can promote climate change adaptation by advocating for the reforms to NFIP described above. First, you can write to your Congresspersons to express your views about proposed legislation. The Flood Insurance Premium Parity Act of 2015 has been referred to the House Committee on Financial Services.[106] This act would allow for increased subsidies, further hindering the financial viability of the NFIP. It is essential to press upon Congress the importance of a well-reasoned response to climate change beginning with curtailing the perverse incentives to develop in high-risk flood areas by restoring the measures called for in the Biggert-Waters Act. This issue should be one that allows congressional representatives to reach across the aisle. Republican representatives may be persuaded by arguments regarding the need to make the NFIP solvent, while democrats may be concerned with addressing one of the greatest climate related threats our nation faces.

Both Congress and the White House can be contacted using the government's website at http://www.usa.gov/Contact/US-Congress.shtml. This site provides information on who your congressional representatives are and how they can be contacted. You can generally reach your representatives through

[105] Suggestions adopted from Jennifer Wriggins, *Flood Money: The Challenge of U.S. Flood Insurance Reform in A Warming World*, 119 Penn St. L. Rev. 361, 421 (2014).
[106] H.R.141 - Flood Insurance Premium Parity Act of 2015, *available at* https://www.congress.gov/bill/114th-congress/house-bill/141?q=%7B%22search%22%3A%5B%22HR+141%22%5D%7D

their individual websites as well. However, the most effective means of influencing congressional representatives are through direct letters and, best of all, in person meetings. Many members of congress meet with constituents in their district offices, and advocates are encouraged to seek direct meetings with their representatives.

Flood insurance measures being considered by Congress can be found at https://www.congress.gov/ by simply typing "flood insurance" into the search bar. Proposed measures pass through committees tasked with exploring specific issues; it is at this stage that they usually receive the most thorough consideration. Committees relevant to a specific piece of legislation will be identified on congress.gov, and you can find contact information for relevant congresspersons at usa.gov as mentioned above. Committees working in these issues include the House Committee on Financial Services, through which the Affordability Act passed,[107]and the Committee on Banking, Housing, and Urban Affairs, which considered a Senate version of the legislation.[108]

5.3 Agency Action

While congressional action may have broader effects, a great deal can be accomplished at the agency level. Agencies promulgate new regulations through the rulemaking process. For instance, the Affordability Act authorizes FEMA to create a rule specifying how it will account for flood mitigation in determining rates.[109] To complete the rulemaking, FEMA must provide public notice and an opportunity to comment on the proposed regulation before it becomes final.[110] Proposed regulations can now be found and commented on at regulations.gov simply by searching "flood insurance."[111] Citizens can provide their thoughts on the rules agencies suggest, and the agencies must consider these comments.[112] When promulgating the final rule, the agency must include a concise and general statement of the rule's basis and purpose.[113] Additionally, where FEMA has not proposed a rule, a formal process allows citizens to petition them to do so. There are several resources describing this process.[114]

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[107] H.R. 3370 (113TH): HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OF 2014, govtrack.us, *available at* https://www.govtrack.us/congress/bills/113/hr3370.

[108] S.1610 - HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OF 2013, congress.gov, *available at* https://www.congress.gov/bill/113th-congress/senate-bill/1610.

[109] CHANGES TO THE NATIONAL FLOOD INSURANCE PROGRAM – WHAT TO EXPECT: IMPACT OF CHANGES TO THE NFIP UNDER HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OF 2014, FEMA, 15, *available at* http://www.fema.gov/media-library-data/1403633987258-7a504b5ba12674c0f36adb67fe103ee7/Changes_to_the_NFIP_What_to_Expect.pdf.

[110] Gilbert LLP, A CITIZENS GUIDE TO INFLUENCING AGENCY ACTION, 3-6, *available at* http://www.gotofirm.com/content/uploads/2012/11/CitizensGuide.pdf.

[111] http://www.regulations.gov/#!searchResults;rpp=25;po=0;s=flood%252Binsurance;fp=true;ns=true

[112] Gilbert LLP, *supra* note 110.

[113] *Id.*

[114] *Id.* at 12; Environmental Law Institute, A CITIZEN'S GUIDE TO USING FEDERAL ENVIRONMENTAL LAWS TO SECURE ENVIRONMENTAL JUSTICE, 33, *available at* http://www.epa.gov/environmentaljustice/resources/reports/annual-project-reports/citizen_guide_ej.pdf.

Finally, the Technical Mapping Advisory Council (TMAC), a federal advisory committee established to review and make recommendations to FEMA on matters related to the national flood mapping, holds public meetings at which it considers comments submitted by the public in advance.[115] TMAC is due to issue a 2015 Annual Report, and, more significantly, FEMA is expected to complete its framework of the mapping program by the fall of 2015 with a TMAC review of that framework due in 2016.[116] The TMAC is charged with, among other things, making recommendations to the Federal Insurance Administrator on "mapping standards and guidelines" and "how to maintain, on an ongoing basis, flood insurance rate maps and flood risk identification."[117] The TMAC deals with complex technical issues but nonetheless represents an opportunity for an informed and concerned citizen to question the perverse incentives created by the current system. TMAC publishes notice of its meeting on regulations.gov, and they can be found by simply searching for "TMAC." Notices provide the meeting location and at least a brief description of topics to be considered. Many of these topics will be of a technical nature, and, if you have the requisite technical expertise, you are encouraged to engage with TMAC on decisions regarding flood zone mapping. Those without technical expertise should not be discouraged from participating by commenting on the importance of incorporating climate change projections into insurance maps.

[115] *See e.g.* 79 Fed. Reg. 55005 (Sept. 15, 2014).
[116] TECHNICAL MAPPING ADVISORY COUNCIL MEETING MARCH 10-11, 2015, TMAC, *available at* http://www.fema.gov/media-library-data/1429730866544-f8ac3427604286398b658245276be532/TMAC_Meeting_Summary_March_10-11_2015.pdf
[117] *Id.*