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HARVEY, IRMA, AND THE NFIP: DID THE 2017 HURRICANE SEASON MATTER TO FLOOD INSURANCE REAUTHORIZATION?

*Robin Kundis Craig**

I. INTRODUCTION

In April 2014, Farmers Insurance Company filed nine high-profile class-action lawsuits on behalf of itself, other insurance companies, and policyholders with damaged properties against approximately 200 Chicago-area municipalities, arguing that those municipalities were failing to deal with climate change.¹ Specifically, Farmers Insurance alleged that these cities and counties were aware that climate change was leading to heavier rains but were failing to upgrade their water infrastructure—especially sewers and stormwater drains—in response.² The lawsuit came almost exactly one year after the Democratic Governor of Illinois, Pat Quinn, declared a state of emergency in the face of unprecedented rains that flooded Chicago, overwhelmed sewers, created “geysers of wastewater,” and turned city streets into rivers navigable by kayak and canoe.³ The losses from the spring 2013 flooding totaled at least \$218 million—and much of that loss was covered by insurance.⁴

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1. Ari Phillips, *In Landmark Class Action, Farmers Insurance Sues Local Governments for Ignoring Climate Change*, THINKPROGRESS (May 19, 2014, 4:51 PM), <https://thinkprogress.org/in-landmark-class-action-farmers-insurance-sues-local-governments-for-ignoring-climate-change-19c31eef042e#.q33quzenc>.

2. *Id.* The municipalities acquired this knowledge, the lawsuit further claimed, through a 2008 climate change action plan and a 2011 report from the regional water management authority detailing the deficiencies. See Gail Sullivan, *Climate Change: Get Ready or Get Sued*, WASH. POST (May 19, 2014), https://www.washingtonpost.com/news/morning-mix/wp/2014/05/19/climate-change-get-ready-or-get-sued/?utm_term=.609be5771e1f.

3. Sullivan, *supra* note 2.

4. Rob Wile, *An Insurance Company Is Suing 200 Illinois Towns for Not Being Better Prepared for Climate Change*, BUS. INSIDER (May 18, 2014, 7:24 PM), <http://www.businessinsider.com/farmers-sues-towns-over-climate-damage-2014-5>.

Farmers Insurance dropped its lawsuits in early June of 2014, claiming that the filing itself was enough to accomplish its primary goal—bringing climate change financial realities to the municipalities’ attention.⁵ Indeed, its lawsuits did serve to highlight the potential role of insurance in climate change adaptation. For example, *ThinkProgress* noted in May 2014 that:

Insurance companies are becoming increasingly concerned, and more vocal, about the rising costs of climate change. With large fossil fuel companies reluctant to take greenhouse gas mitigation efforts in the face of potential profit losses, the behemoth insurance industry could provide a counterbalance to the energy industry when it comes to incentivizing near-term emissions cuts, or at least adaptation to the effects of climate change.⁶

The Christian Science Monitor similarly reported that “insurance companies are vocal about the rising costs of global warming and want to push cities to invest in prevention as a way to avoid future lawsuits.”⁷ Somewhat perversely, however, one of the immediate state responses to Farmers Insurance’s lawsuits was to strengthen governments’ immunity from such tort liability.⁸

The fact that the law can create incentives is well-documented in the literature;⁹ indeed, creating incentives to guide human behavior is often one of law’s primary goals and purposes.¹⁰ However, legal incentives can also become perverse,¹¹ especially in environmental and natural resource regulation.¹²

5. Robert McCoppin, *Insurance Company Drops Suits over Chicago-Area Flooding*, CHI. TRIB. (June 3, 2014, 6:52 PM), <http://www.chicagotribune.com/news/local/breaking/chicago-flooding-insurance-lawsuit-20140603-story.html>.

6. Phillips, *supra* note 1.

7. Mica Rosenberg, *Climate Change Lawsuits Filed Against Some 200 US Communities*, CHRISTIAN SCI. MONITOR (May 17, 2014), <http://www.csmonitor.com/Environment/Latest-News-Wires/2014/0517/Climate-change-lawsuits-filed-against-some-200-US-communities>.

8. David Ormsby, *Climate Change Lawsuits Could Again Haunt Illinois Cities*, HUFFINGTON POST: BLOG (July 30, 2014, 10:05 AM), http://www.huffingtonpost.com/david-ormsby/climate-change-lawsuits-c_b_5631969.html.

9. E.g., Todd D. Rakoff, *Social Structure, Legal Structure, and Default Rules: A Comment*, 3 S. CAL. INTERDISC. L.J. 19, 25 (1993); Lynn D. Wardle, *Dilemmas of Indissoluble Parenthood: Legal Incentives, Parenting, and the Work-Life Balance*, 26 BYU J. PUB. L. 265, 296, 299 (2012).

10. E.g., Jason Scott Johnston, *Uncertainty, Chaos, and the Torts Process: An Economic Analysis of Legal Form*, 76 CORNELL L. REV. 341, 348–49 (1991).

11. Wardle, *supra* note 9, at 265.

12. E.g., J. Peter Byrne, *Precipice Regulations and Perverse Incentives: Comparing Historic Preservation and Endangered Species Listing*, 27 GEOGRAPHIC INT’L ENVTL. L. REV. 343, 344–46 (2015); Byron Swift, *How Environmental Laws Work: An Analysis of the Utility*

Insurance operates primarily to mitigate risk.¹³ By changing the costs or potential costs to private actors of certain behaviors, insurance makes those behaviors less risky to specific individuals by effectively spreading the costs over a larger population of at-risk individuals, not all of whom will actually suffer harm.¹⁴ As a result, insurance can directly incentivize actions—like living on the coast—that would otherwise be too risky for anyone except the extremely wealthy to undertake.¹⁵

Both the law and the availability of insurance have been instrumental in promoting coastal development. This article focuses on the National Flood Insurance Program (NFIP) and its relationship to coastal hurricanes, arguing that the NFIP provides a quintessential example of perverse legal incentives for the coast in a climate change era. By allowing homeowners both to pay below-market insurance rates *and* to recover multiple times for flooded properties, the NFIP incentivizes development of the floodplains and coast—two geographic areas where climate change adaptation strategies would benefit from legal incentives for infrastructure withdrawals. Instead, the NFIP is increasingly becoming a “National Hurricane Insurance Program,” with major hurricanes along the Gulf and East Coasts of the United States driving most of the program’s major payouts. Hurricane-related payouts are a significant reason why the NFIP is close to bankruptcy. In addition, the prominence of hurricanes in NFIP payouts is also creating regional tensions, with western states largely subsidizing states on the Gulf and East Coasts.

The NFIP came up for reauthorization in 2017—just as the United States was experiencing its worst hurricane season in over a decade. As a result, this most recent reauthorization process offers a window into how—or whether—Congress is thinking about the relationships among climate change, insurance incentives, and federal fiscal liabilities. This article begins with an overview of the NFIP and its intensifying relationship with coastal hurricanes.¹⁶ Part III reviews the 2017 hurricane season, including the implications of Hurricanes Harvey and Irma for the NFIP.¹⁷ Part IV then examines the NFIP reauthorization process in more detail, focusing on House Bill 2874, “The 21st Century Flood Reform Act,” which the House

Sector’s Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act, 14 TUL. ENVTL. L.J. 309, 393 n.390 (2001).

13. Qihao He, *Mitigation of Climate Change Risks and Regulation by Insurance: A Feasible Proposal for China*, 43 B.C. ENVTL. AFF. L. REV. 319, 325 (2016); Edward P. Richards, *Applying Life Insurance Principles to Coastal Property Insurance to Incentivize Adaptation to Climate Change*, 43 B.C. ENVTL. AFF. L. REV. 427, 430 (2016).

14. He, *supra* note 13, at 324–25; Richards, *supra* note 13, at 431.

15. Richards, *supra* note 13, at 428.

16. *See infra* Part II.

17. *See infra* Part III.

of Representatives passed in November 2017 and which is still awaiting a Senate response.¹⁸ The article concludes that, while Congress appears to be taking some important steps toward recognizing the vulnerability of coasts, it could still do much more to transform the NFIP into a program that actively promotes climate change adaptation.¹⁹

II. THE NATIONAL FLOOD INSURANCE PROGRAM

Congress enacted the NFIP in 1968 specifically because private insurance companies would not cover flood-prone properties. Today, coastal property owners are both the primary beneficiaries and the primary bankrupters of the program, particularly because of growing numbers of increasingly expensive losses caused by hurricanes. Given that climate change is expected to increase both the frequency and the severity of these costly coastal storms, it is worth re-examining the NFIP's role in the Anthropocene.

A. Overview of the National Flood Insurance Program

After decades of being able to provide only post-disaster relief to flood victims, Congress enacted the NFIP in an attempt to provide more proactive federal flood protection.²⁰ After Hurricane Betsy devastated the Gulf of Mexico coast in 1965, Congress enacted the Southeast Hurricane Disaster Relief Act,²¹ which authorized an insurance feasibility study.²² The resulting 1966 study recommended a federal flood insurance program,²³ and in 1968 Congress created the NFIP through the National Flood Insurance Act (NFIA).²⁴ The primary purposes of the NFIP are to “[b]etter indemnify individuals for flood losses through insurance; [r]educ[e] future flood damages through State and community floodplain management regulations;

18. See *infra* Part IV.

19. See *infra* Part V.

20. FED. INS. & MITIGATION ADMIN., FED. EMERGENCY MGMT. AGENCY, NATIONAL FLOOD INSURANCE PROGRAM: PROGRAM DESCRIPTION 1 (2002), https://www.fema.gov/media-library-data/20130726-1447-20490-2156/nfipdescrip_1_.pdf [hereinafter 2002 FEMA NFIP OVERVIEW].

21. Southeast Hurricane Disaster Relief Act of 1965, Pub. L. No. 89-339, 79 Stat. 1301 (Nov. 8, 1965).

22. Sarah Fox, *This Is Adaptation: The Elimination of Subsidies Under the National Flood Insurance Program*, 39 COLUM. J. ENVTL. L. 205, 213–14 (2014); see also 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 1–2 (providing a similar history).

23. 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 2.

24. Pub. L. No. 90-448, 82 Stat. 476, 572 (1968) (codified as amended at 42 U.S.C. §§ 4001–4131 (2014)).

and [r]educe Federal expenditures for disaster assistance and flood control.”²⁵

Unlike most private insurance, the NFIP directs its incentive structures toward *municipalities*, not private behavior. Specifically, the NFIP uses insurance coverage as an incentive to local governments to encourage them to regulate land use and building requirements that reduce flood damage, enabling “property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.”²⁶ As such, unlike much traditional property insurance, the NFIP generally focuses less on how individual property owners behave than on how municipalities regulate: “If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses.”²⁷

The NFIP does, however, seek to make both governments and individuals more cognizant of flooding risks. For example, the NFIP requires the Federal Emergency Management Agency (FEMA) to identify and map floodplains, which “creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.”²⁸ Since the 1973 amendments, the NFIP also requires property owners to purchase flood insurance if they live in a Special Flood Hazard Area and have a mortgage from a federally backed or regulated lender.²⁹ As FEMA explains:

The 1973 Act required that Federal agencies and federally insured or regulated lenders had to require flood insurance on all grants and loans for acquisition or construction of buildings in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP. This requirement is referred to as the Mandatory Flood Insurance Purchase Requirement. The SFHA is that land within the floodplain of a community subject to a 1 percent or greater chance of flooding in any given year, commonly referred to as the 100-year flood.³⁰

25. 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 2.

26. *Id.* at 1.

27. *Id.*; see also U.S. GOV’T ACCOUNTABILITY OFF., FLOOD INSURANCE: REVIEW OF FEMA STUDY AND REPORT ON COMMUNITY-BASED OPTIONS 4 (2016), <http://www.gao.gov/assets/680/679214.pdf>.

28. 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 2.

29. A. Dan Tarlock & Deborah M. Chizewer, *Living with Water in a Climate-Changed World: Will Federal Flood Policy Sink or Swim?*, 46 ENVTL. L. 491, 506 (2016); 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 3.

30. 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 3.

In 2009, the federal government issued 5,700,235 flood insurance policies to individual homeowners within communities participating in the NFIP, which was the highest number of policies issued in a given year.³¹ While the number of issued policies has slightly declined since 2009, the federal government still issues over five million flood insurance policies every year.³²

As perhaps is befitting of legislation prompted most directly by a hurricane, property owners in coastal states are the primary beneficiaries of the NFIP. Of the states where more than 60,000 NFIP policies were in force in 2016, for example, all but Pennsylvania (64,588 policies) are coastal states.³³ In descending order by number of policies, these states include Florida (1,813,592), Texas (589,357), Louisiana (452,680), California (304,388), New Jersey (233,789), South Carolina (201,373), New York (188,530), North Carolina (130,258), Virginia (106,005), Georgia (89,295), Maryland (68,386), Mississippi (66,169), Massachusetts (64,689), and Hawaii (60,199).³⁴

B. The NFIP on the Coasts

Originally, the NFIP's goal was to "mov[e] people out of harm's way," but it has "morphed into a program that moved them right into harm's way, indeed paying them with cheap insurance to move [to flood prone areas.]"³⁵ As scholars have emphasized, "[b]y providing subsidized flood insurance to coastal properties, the NFIP encourages Americans to purchase property on the coast."³⁶ Moreover, while the NFIP still encourages better building codes and land use regulation along the coast, those measures are often inadequate. For example, raised houses in New Orleans were still "smashed by walls of water fifteen- to twenty-feet high" during Hurricane Katrina.³⁷

31. *Total Policies in Force by Calendar Year*, FEMA, <https://www.fema.gov/total-policies-force-calendar-year> (last updated Apr. 6, 2018).

32. *Id.*; see, e.g., UNION OF CONCERNED SCIENTISTS, *OVERWHELMING RISK: RETHINKING FLOOD INSURANCE IN A WORLD OF RISING SEAS* 7 fig. 4 (2013), https://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/Overwhelming-Risk-Full-Report.pdf ("At the end of 2012, NFIP provided more than 5.6 million insurance policies, insuring \$1.25 trillion in assets but collecting only \$3.6 billion in total premiums.").

33. U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 27, at 7 fig. 1.

34. *Id.*

35. Oliver A. Houck, *Retaking the Exam: How Environmental Law Failed New Orleans and the Gulf Coast South and How It Might Yet Succeed*, 81 TUL. L. REV. 1059, 1078–79 (2007).

36. Jenna Schweitzer, *Climate Change Legal Remedies: Hurricane Sandy and New York City Coastal Adaptation*, 16 VT. J. ENVTL. L. 243, 249–50 (2014).

37. Houck, *supra* note 35, at 1078–79.

Repetitive-loss properties are the primary evidence of the NFIP's perverse incentive structure because they represent the program's facilitation of rebuilding in risky areas, rather than encouraging property owners to migrate inland.³⁸ These properties are also an important cause of the NFIP's insolvency. According to the *Union of Concerned Scientists*, "NFIP has paid out almost \$9 billion in claims to repetitive-loss properties, which amounts to about a quarter of all payments since 1978. Repetitive-loss properties . . . account for just 1.3 percent of all policies but are responsible for fully 25 percent of all NFIP claim payments since 1978."³⁹

Some of the individual stories defy common sense. As three examples, some properties have made over forty claims each; "[o]ne property in Houston received 16 payouts totaling \$806,591, more than seven times the structure's value;" and "[o]ne house in Alabama, valued at \$153,000, has received \$2.25 million in NFIP payouts."⁴⁰ As of April 2016, FEMA had identified approximately 11,900 remaining NFIP-insured properties that qualify as severe repetitive-loss properties,⁴¹ up from approximately 9,000 such properties identified in 2011.⁴²

Notably, coastal properties dominate repetitive loss payments from the NFIP—that is, repeat payments resulting from more than one flooding disaster.⁴³ While amendments to the NFIP in 2004 allowed the federal

38. Jan Ellen Spiegel, *CT's Repeat Flood Damage Dilemma: Move Out or Rebuild?*, CT MIRROR (Oct. 9, 2015), <https://ctmirror.org/2015/10/09/cts-repeat-flood-damage-dilemma-move-out-or-rebuild/> ("[S]horeline and climate experts, public officials and others have grown increasingly critical of [programs like the NFIP that insure repetitive losses along coasts], arguing that they encourage rebuilding in places that have already shown themselves to be flood-prone and are likely to become more so because of climate change. . . .").

39. UNION OF CONCERNED SCIENTISTS, *supra* note 32, at 9 fig. 6; *see also* Erika Bolstad, *Insurance May Be Dropped for Properties That Repeatedly Flood*, SCI. AM. (Sept. 29, 2016), <https://www.scientificamerican.com/article/insurance-may-be-dropped-for-properties-that-repeatedly-flood/> ("Properties that flood repeatedly represent about 1 percent of the total policies of the program but add up to 25 to 30 percent of the claims. They also represent about \$12 billion of the program's \$23 billion debt.").

40. U.C. Davis Center for Watershed Sciences, *California, Flood Risk, and the National Flood Insurance Program*, CAL. WATERBLOG (Dec. 14, 2016), <https://californiawaterblog.com/2016/12/14/california-flood-risk-and-the-national-flood-insurance-program/>.

41. FED. EMERGENCY MGMT. AGENCY, U.S. DEP'T OF HOMELAND SEC., GUIDANCE FOR SEVERE REPETITIVE LOSS PROPERTIES 1 (2016), https://www.fema.gov/media-library-data/1458756489938-3dc4734e1bf9db98026948383a4493eb/21_srl_508_apr2016.pdf; *cf.* U.C. Davis Center for Watershed Sciences, *supra* note 40 (placing the number of repetitive-loss properties in 2016 at more than 30,000).

42. FED. EMERGENCY MGMT. AGENCY, U.S. DEP'T OF HOMELAND SEC., GUIDANCE FOR SEVERE REPETITIVE LOSS PROPERTIES 1 (2011), https://www.fema.gov/pdf/nfip/manual201205/content/20_srl.pdf.

43. UNION OF CONCERNED SCIENTISTS, *supra* note 32, at 9 fig. 6.

government to buy out repetitive-loss property owners,⁴⁴ repetitive-loss coastal properties have become political and financial issues in Connecticut,⁴⁵ Florida,⁴⁶ Louisiana,⁴⁷ and Texas.⁴⁸

Nevertheless, the NFIP remains a significant reason why people continue to build—and re-build—along the nation’s coasts. It directly “provides residential coverage up to \$250,000 for the structure and \$100,000 for contents, and up to \$500,000 for business structures and \$500,000 for business contents.”⁴⁹ These NFIP funds, moreover, become part of a “highly subsidized” package of financial resources, and coastal properties “are currently insured by a combination of [NFIP] policies, some private excess coverage for flooding, and federal disaster relief that is provided after specific events. This . . . encourages rebuilding in areas that are already at high risk and which will eventually be inundated.”⁵⁰

C. The NFIP, Hurricanes, and Incentives

In a very real sense, the NFIP defies both the realities of coastal dynamics and the logic of insurance schemes. Part of the issue is subsidized premiums for properties located in areas likely to flood, which make the program financially untenable in the long run—but homeowners remain unwilling to pay the real cost of building along a coast, contributing to the political dynamics of NFIP authorization. Indeed, the NFIP exists in large part because “[p]rimary insurers—those that sell standard insurance policies to individuals and businesses—. . . could not charge affordable premiums and profit when private flood insurance was proposed in the 1950s.”⁵¹ However, the federal government has also not been able to make the program pay for itself:

44. *Repetitive Flood Claims Grant Program Fact Sheet*, FEMA, <https://www.fema.gov/repetitive-flood-claims-grant-program-fact-sheet> (last updated Mar. 2, 2018).

45. Spiegel, *supra* note 38.

46. FED. EMERGENCY MGMT. AGENCY, U.S. DEP’T OF HOMELAND SEC., ANALYSIS OF FLORIDA’S NFIP REPETITIVE LOSS PROPERTIES: USING GEOSPATIAL TOOLS AND FIELD VERIFICATION DATA 6 (2005), https://www.fema.gov/media-library-data/20130726-1712-25045-1952/analysis_of_florida_s_nfip_repetitive_loss_properties_using_geospatial_tools_and_field_verification_data.pdf.

47. U.C. Davis Center for Watershed Sciences, *supra* note 40.

48. *Id.*

49. Richards, *supra* note 13 at 446.

50. *Id.* at 428.

51. Michael Thrasher, *The Private Flood Insurance Market Is Stirring After More Than 50 Years of Dormancy*, FORBES (Aug. 26, 2016, 4:47 PM), <https://www.forbes.com/sites/michaelthrasher/2016/08/26/the-private-flood-insurance-market-is-stirring-after-more-than-50-years-of-dormancy/#7889d6e96dda>.

The NFIP is designed to pay losses and operating expenses out of policyholder premiums. However, the premiums that NFIP policyholders have paid have historically been insufficient to cover the program's losses from flood claims. This is primarily because to achieve the NFIP's objectives, many NFIP policyholders have long received heavily subsidized premium rates. . . . In 2013, roughly twenty percent of flood insurance policies nationwide received discounts, typically worth fifty-five to sixty percent off the full-risk price. FEMA's 2011 Actuarial Rate Review noted that, because of discounted premium rates, "it is currently impractical for the NFIP to be actuarially sound in the aggregate."⁵²

The Government Accountability Office (GAO), similarly, has noted that "[a]s a result of the program's importance, level of indebtedness to Treasury, and substantial financial exposure for the federal government and taxpayers, as well as FEMA's operating and management challenges, NFIP has been on our high-risk list since 2006."⁵³

More basically, the NFIP incentivizes building in the wrong places, including along the coast. Indeed, one researcher noted that:

The NFIP is an actuarial joke. It would be like having a federal automobile insurance company that only insured teenage boys who drink and drive. By definition the properties covered by the program are doomed to be flooded, damaged, and even destroyed, not just once, but time and time again.⁵⁴

FEMA itself has recognized that the NFIP exists because private insurance schemes for the properties it insures cannot function profitably, "primarily because of the catastrophic nature of flooding and the inability to develop an actuarial rate structure which could adequately reflect the risk to which flood-prone properties are exposed."⁵⁵ Thus, the NFIP has always stepped in where private insurance companies feared to tread, creating incentives to build in risky areas like coasts that the private market would not support.⁵⁶

Recent studies more concretely pinpoint the roles of coastal properties and hurricanes in the NFIP's insolvency. Increasing numbers of increasingly damaging and expensive coastal storms in the 21st century have

52. Fox, *supra* note 22, at 217.

53. U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 27, at 1.

54. Dwight H. Merriam, *Regulating Rebuilding in Developed Areas Following Disasters*, in *LOSING GROUND: A NATION ON EDGE* 325, 326 (John R. Nolon & Daniel B. Rodriguez eds., 2007).

55. 2002 FEMA NFIP OVERVIEW, *supra* note 20, at 1.

56. See UNION OF CONCERNED SCIENTISTS, *supra* note 32, at 1 ("In the face of increasingly unmanageable risks, many private insurers have left the coastal insurance market. The National Flood Insurance Program (NFIP) is now practically the sole provider of flood insurance for home owners and small businesses nationwide.").

underscored the financial incoherence of the NFIP in a climate change era. “Almost 50 years [after its creation], the NFIP is \$25 billion in debt, partly because of these subsidized rates that do not reflect the true cost of owning coastal property.”⁵⁷ Hurricanes and other severe coastal storms have strained the NFIP far into insolvency, reflecting both an increasing frequency of these storms and the growing physical and financial damage that they can inflict. As for frequency, “[s]tarting in the 1990s . . . [e]ight of the most damaging hurricanes in history came ashore in the next decade: Opal, Danny, Georges, Frances, Lili, Ivan, Katrina, and Rita.”⁵⁸ NFIP payouts reflect this reality of increasing numbers of highly destructive storms: “In 2001, NFIP payouts topped a billion dollars. In 2005, they topped over thirteen billion, and they broke the bank. Losses were over thirty billion cumulatively through 2006.”⁵⁹ However, the increasing amount of wealth invested in coastal infrastructure has also helped to make more recent storms costlier.⁶⁰

The NFIP collects about \$3.3 billion in premiums each year,⁶¹ but that has not been enough in this century to cover its losses—primarily because of coastal hurricanes. As the GAO noted in a report to Congress in August 2016, the 2005 hurricane season, especially hurricane Katrina, and Superstorm Sandy in 2012 put FEMA in the position of having to borrow money from the United States Department of the Treasury to pay NFIP claims.⁶² The “NFIP paid out more claims in 2005 [following Hurricane Katrina] than it had paid out over the entire life of the program to that point.”⁶³ Hurricane Katrina made Louisiana the second-largest recipient of NFIP payments; without that event, Louisiana would rank number twelve.⁶⁴ “FEMA had insufficient funds to cover the claims, and Congress had to increase NFIP’s borrowing authority to \$20.775 billion. Following Superstorm Sandy, that borrowing limit was increased again to \$30 billion.”⁶⁵ Superstorm Sandy had similarly distorting impacts on NFIP payments and was single-handedly responsible for making New Jersey and

57. Schweitzer, *supra* note 36, at 250.

58. Houck, *supra* note 35, at 1078.

59. *Id.*

60. Fox, *supra* note 22, at 206–07. Prior to Tropical Storm Allison in 2001, NFIP 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. *Id.*

61. Thrasher, *supra* note 51.

62. U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 27, at 1.

63. Fox, *supra* note 22, at 218.

64. U.C. Davis Center for Watershed Sciences, *supra* note 40.

65. Fox, *supra* note 22, at 218.

New York top ten NFIP payment recipients.⁶⁶ These two storms thus demonstrate the sensitivity of the NFIP to hurricanes and other major coastal storm events, and, “[a]s of March 2016, FEMA owed Treasury \$23 billion.”⁶⁷

In anticipation of the 2017 reauthorization of the NFIP, the Congressional Budget Office (CBO) prepared a report on the program’s fiscal soundness that underscores the distorting role that coastal properties and hurricane exposure are playing.⁶⁸ The CBO concluded overall that the NFIP “had an expected one-year shortfall of \$1.4 billion,”⁶⁹ which “is attributable largely to premiums falling short of expected costs in coastal counties, which constitute roughly 10 percent of all counties with NFIP policies but account for three-quarters of all NFIP policies nationwide.”⁷⁰ Specifically, coastal counties had a net shortfall of \$1.5 billion, while inland counties had a net surplus of \$200 million.⁷¹ The coastal counties’ shortfall, moreover, arises because premiums “do not cover the expected cost of wave damage from storm surges.”⁷²

However, the CBO’s report became even more targeted. It estimated “that the 33 counties with a shortfall of more than \$10 million accounted for nearly 90 percent of the \$2 billion from all 823 counties with shortfalls”—and most of those 33 counties were located “along the southeast coast and the Gulf of Mexico.”⁷³ In contrast, most of the counties with the highest surpluses were located “along the northeast and west coasts,”⁷⁴ creating a map of donor and recipient counties that shows how much of the rest of the nation subsidizes homeowners along the Gulf of Mexico and southeast Atlantic coasts.⁷⁵

66. U.C. Davis Center for Watershed Sciences, *supra* note 40 (eliminating the payments from Superstorm Sandy, New Jersey would rank fifteenth and New York would rank sixteenth).

67. U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 27, at 1.

68. CONG. BUDGET OFF., THE NATIONAL FLOOD INSURANCE PROGRAM: FINANCIAL SOUNDNESS AND AFFORDABILITY (2017), <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53028-nfipreport2.pdf>.

69. *Id.* at 1.

70. *Id.* at 2; *see also id.* at 13 (“[Coastal counties]—those with at least some expected claims from storm surges or for which precipitation from coastal storms . . . accounted for more than 75 percent of expected claims—represented only 10 percent of all counties with NFIP policies. However, they accounted for most of the program’s total shortfall.”).

71. *Id.*; *see also id.* at 12 (“On net, coastal counties show a large shortfall and inland counties show a relatively small surplus.”).

72. CONG. BUDGET OFF., *supra* note 68.

73. *Id.* at 12.

74. *Id.* at 13.

75. *Id.* at 14 fig. 2. *See also id.* at 15 (“[T]he additional expected costs from wave damage are spread broadly among the NFIP policyholders, resulting in a cross-subsidy from inland counties (on average) to coastal counties. That is, some of the expected costs

Coastal storm-related damages account for roughly two-thirds of NFIP payouts over the last thirty-five years.⁷⁶ Flooding from hurricane-related storm surges accounts for 37% of the payouts; from hurricane-related precipitation, 16%; from tropical storms, 5%; and from other kinds of coastal storms, like nor'easters, 2%.⁷⁷ In contrast, inland flooding causes only 36% of NFIP payouts.⁷⁸ Thus, the NFIP truly is becoming a coastal hurricane insurance program.

The NFIP also promotes a counter-adaptive psychological world view of coastal living. For example, property owners insured under the NFIP appear to accept coastal damage and destruction as a normal event, not as a signal to consider relocation. In southern California in January 2016, “[m]assive waves cleared a 25-foot retaining wall and crashed into a Pacifica restaurant . . . bursting through the beachside windows and rushing over tables and chairs.”⁷⁹ Although the restaurant has suffered the same kind of damage in the past, the owner was counting on insurance to repair the restaurant yet again, in time for an upcoming event.⁸⁰ Likewise, coastal flooding near Nantucket in February 2017 was described as a normal way of life.⁸¹

III. THE 2017 HURRICANE SEASON, CLIMATE CHANGE, AND THEIR IMPLICATIONS FOR THE NFIP

The NFIP came up for reauthorization in 2017, which happened to be the worst year for hurricanes in the United States since 2005. This part reviews the 2017 hurricane season, focusing on Hurricanes Harvey, Irma, and Maria, before reflecting on what the season as a whole should mean for the NFIP.

associated with coastal policies are covered by high premiums paid by policyholders in inland counties.”); *id.* at 16 (“Eighty-five percent of the policyholders for properties located in Zone V, the highest risk [and coastal] zone, do not pay rates that reflect their actual flood risk.”).

76. CONG. BUDGET OFF., *supra* note 68, at 4.

77. *Id.*

78. *Id.*

79. Colleen Nowell & Michelle Roberts, *Waves Burst into Pacifica’s Moonraker Restaurant, Rushing Over Tables, Chairs*, NBC BAY AREA (Jan. 24, 2017, 10:04 AM), <http://www.nbcbayarea.com/news/local/Waves-Burst-Into-Pacifica-Restaurant-Rushing-Over-Tables-Chairs-411667915.html>.

80. *Id.*

81. Caitlin Fichtel & Marc Fortier, *Winter Storm Moves Out of Boston; Coastal Flooding, Power Outages Possible*, NBC BOS. (Feb. 12, 2017, 1:41 PM), <http://www.nbc.boston.com/news/local/Preparations-Underway-for-Another-Storm-413530223.html>.

A. Hurricane Harvey: A Climate Change Connection to Record Rain

Hurricane Harvey was a Category 4 hurricane that made landfall on the central Texas coast just north of Corpus Christi on August 25, 2017.⁸² At its first landfall, it was 280 miles in diameter and had 130 mile-per-hour winds.⁸³ It moved north to Houston the next day and remained there for four days, then made landfall a third time on August 29 at Port Arthur and Beaumont, Texas, near the Louisiana border.⁸⁴ While Hurricane Harvey concentrated its force on Texas and Louisiana, “[i]t affected 13 million people from Texas through Louisiana, Mississippi, Tennessee, and Kentucky,” and at least 88 people died as a result of the storm.⁸⁵

Storm surge from Hurricane Harvey ranged from 3 feet to 12.5 feet, with the highest storm surge occurring in Aransas County in a National Wildlife Refuge, limiting the amount of human damage.⁸⁶ However, most of Hurricane Harvey’s damage came from flooding caused by unprecedented rainfall.⁸⁷ As noted, the hurricane stalled over Houston, dropping 2 feet of rain in the first 24 hours and 40 inches over 48 hours.⁸⁸ Two reservoirs overflowed.⁸⁹ When the hurricane made landfall for the third time, “[i]t dumped 26 inches of rain in 24 hours” at the Louisiana border,⁹⁰ then rained an additional 10 inches in Nashville, Tennessee, on September 1st.⁹¹

In an attempt to describe the scale of the rainfall, a reporter noted that “[a]t least 20 inches of rain fell over an area (nearly 29,000 square miles) larger than 10 states, including West Virginia and Maryland (by a factor of more than two)” and “[a]t least 30 inches of rain fell over an area (more than 11,000 square miles) equivalent to Maryland’s size.”⁹² At the storm’s peak on September 1, one-third of Houston was underwater,⁹³ and “[t]otal rainfall

82. Kimberly Amadeo, *Hurricane Harvey Facts, Damage, and Costs*, BALANCE (Sept. 18, 2018), <https://www.thebalance.com/hurricane-harvey-facts-damage-costs-4150087>.

83. *Hurricane Harvey Aftermath: What Happened and What’s Next*, CNN <https://www.cnn.com/specials/us/hurricane-harvey> (last visited Feb. 19, 2018).

84. Amadeo, *supra* note 82.

85. *Id.*

86. *Id.*; Jason Samenow, *Harvey Is a 1000-Year Flood Event Unprecedented in Scale*, WASH. POST (Aug. 13, 2017), https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/08/31/harvey-is-a-1000-year-flood-event-unprecedented-in-scale/?utm_term=.a36393ce6b2f.

87. Amadeo, *supra* note 82.

88. *Id.* (“In comparison Hurricane Katrina dropped just 5 to 10 inches of rain in 48 hours. Most of its flooding came from storm surges that overwhelmed the levee system.”).

89. *Id.*

90. *Id.*; *Hurricane Harvey Aftermath: What Happened and What’s Next*, *supra* note 83.

91. Amadeo, *supra* note 82.

92. Samenow, *supra* note 86.

93. Amadeo, *supra* note 82.

hit 51.88 inches in Cedar Bayou on the outskirts of Houston. That's a record for a single storm in the continental United States."⁹⁴

In addition, "Harvey flooded 800 wastewater treatment facilities and 13 Superfund sites. That spread sewage and toxic chemicals into the flooded areas."⁹⁵ On August 31, an Arkema chemical plant in Crosby, Texas, ignited after the hurricane disrupted the cooling system necessary to keep the chemicals stable.⁹⁶

As of September 5, 2017, Hurricane Harvey had damaged 203,000 homes, of which 12,700 were destroyed.⁹⁷ At \$125 billion in damages, the storm ranks second only to Hurricane Katrina (adjusted to 2017 dollars) as the most damaging storm in United States history, according to National Oceanic and Atmospheric Administration's (NOAA) National Hurricane Center.⁹⁸

Hurricane Harvey caused a "thousand-year flood,"⁹⁹ reaching many victims that were outside of the NFIP's Special Flood Hazard Areas—a significant reason that only about one-fifth of Hurricane Harvey's Texas victims had flood insurance,¹⁰⁰ despite the fact that there are more than 584,000 active NFIP policies in Texas, the second most heavily NFIP-insured state in the nation after Florida.¹⁰¹ Even so, as of early November 2017, FEMA had paid out over \$4 billion to NFIP policyholders damaged by Hurricane Harvey.¹⁰² By February 2018, Harvey had generated 91,226 flood insurance claims, and FEMA had paid out more than \$8.5 billion

94. *Id.*; *Hurricane Harvey Aftermath: What Happened and What's Next*, *supra* note 83.

95. Amadeo, *supra* note 82.

96. *Id.*

97. David Wharton, *Hurricane Harvey's Effect on Flood Insurance Coverage*, DS NEWS (Aug. 1, 2018, 7:08 PM), <https://dsnews.com/daily-dose/08-01-2018/hurricane-harveys-flood-insurance>.

98. *Costliest U.S. Tropical Cyclones Tables Updated 1, 2 tbl. 3a, & 3 tbl. 3b*, U.S. NAT'L OCEANIC & ATMOSPHERIC ADMIN. (2018), <https://www.nhc.noaa.gov/news/UpdatedCostliest.pdf>.

99. Amadeo, *supra* note 82; Ari Blask & Ike Brannon, *Hurricane Harvey Proved We Need More Flood Insurance Competition*, TIME (Sept. 5, 2017), <http://time.com/4927852/hurricane-harvey-flood-insurance/>; Samenow, *supra* note 86.

100. Blask & Brannon, *supra* note 99. In Louisiana and Texas combined, approximately 70% of the homes damaged by Harvey were not covered by flood insurance. Matt Simon, *Flood Insurance and the Historic 2017 Hurricane Season*, HILL & HAMILTON: OHIO INS. BLOG (Sept. 22, 2017), <https://www.hillandhamilton.com/ohio-insurance-blog/flood-insurance-and-the-historic-2017-hurricane-season>.

101. Abby Livingston, *After Hurricanes, Congress Ponders Future of Flood Insurance Program*, TEX. TRIB. (Oct. 9, 2017, 12:00 AM), <https://www.texastribune.org/2017/10/09/flood-insurance/>.

102. *FEMA Will Recover \$1.042 Billion in Reinsurance from the Private Reinsurance Markets*, FEMA (Dec. 5, 2017), <https://www.fema.gov/news-release/2017/12/05/fema-will-recover-1042-billion-reinsurance-private-reinsurance-markets>.

under the NFIP.¹⁰³ Notably, however, low-income and minority communities in Houston continue to suffer,¹⁰⁴ underscoring some of the environmental justice concerns encompassed within national flood insurance and disaster relief policies in addition to the financial and climate change adaptation issues.

Harvey may be the first hurricane for which scientists agree that climate change played a surprisingly large role in the storm's severity.¹⁰⁵ In December 2017, two research groups found that Harvey's record rainfall "was as much as 38 percent higher than would be expected in a world that was not warming."¹⁰⁶ Warmer-than-normal air temperatures, sea levels that are six inches higher than 20 years ago, and climate change-affected weather patterns that promote storm stalling may all have contributed to Harvey's excessive precipitation.¹⁰⁷ In addition, both studies "found that climate change roughly tripled the odds of a Harvey-type storm."¹⁰⁸

Thus, as climate scientists have predicted, it appears that climate change is already increasing the likelihood of increasingly severe hurricanes. This fact should be informing the NFIP reauthorization.

B. Hurricane Irma: A Historic Storm

In some ways, Hurricane Irma surpassed Hurricane Harvey. "Irma was the strongest storm on record in the Atlantic—excluding the Caribbean and

103. FED. EMERGENCY MNGT. AGENCY, U.S. DEP'T OF HOMELAND SEC., *Hurricane Harvey 6 Months Later* (2018), <https://www.fema.gov/media-library-data/1519758737023-e405f4a9920205df46319668b002e878/6MonthTexasHarveyRecoveryGuide.pdf>.

104. Danny Vinik, 'People Just Give Up': Low-Income Hurricane Victims Slam Federal Relief Programs, POLITICO (May 29, 2018, 5:08 AM), <https://www.politico.com/story/2018/05/29/houston-hurricane-harvey-fema-597912>.

105. Amadeo, *supra* note 82; Henry Fountain, *Scientists Link Hurricane Harvey's Record Rainfall to Climate Change*, N.Y. TIMES (Dec. 13, 2017), https://www.nytimes.com/2017/12/13/climate/hurricane-harvey-climate-change.html?_r=0; see also Geert Jan van Oldenborgh et al., *Attribution of Extreme Rainfall from Hurricane Harvey, August 2017*, 12 ENVTL. RES. LETTERS 1, 10 (2017); Mark D. Risser & Michael F. Wehner, *Attributable Human-Induced Changes in the Likelihood and Magnitude of the Observed Extreme Precipitation During Hurricane Harvey*, 44 GEOPHYSICAL RES. LETTERS 12,457, 12,463 (2017).

106. Fountain, *supra* note 105; see Michael Greshko, *Climate Change Likely Supercharged Hurricane Harvey*, NAT'L GEOGRAPHIC (Dec. 13, 2017), <https://news.nationalgeographic.com/2017/12/climate-change-study-hurricane-harvey-flood/> (reporting the same 38% high); see also Oldenborgh et al., *supra* note 105, at 1 (reporting 15% as most probable); Risser & Wehner, *supra* note 105, at 12,462–63 (reporting 19% as most probable).

107. Amadeo, *supra* note 82; German Lopez, *How Global Warming Likely Made Harvey Much Worse, Explained by a Climatologist*, VOX (Aug. 28, 2017, 10:30 AM), <https://www.vox.com/science-and-health/2017/8/28/16214268/houston-floods-harvey-global-warming>.

108. Greshko, *supra* note 106; see Oldenborgh et al., *supra* note 105, at 1.

Gulf of Mexico—with maximum winds of 185 mph and an unofficial wind gust of 199 mph.”¹⁰⁹ It remained a hurricane from August 31 until September 11, 2017.¹¹⁰ The storm stretched 650 miles from east to west and affected nine states in the United States, as well as devastating the Caribbean.¹¹¹ At its peak, Irma’s cloud field covered 300,000 square miles.¹¹² It also was “the first storm on record to maintain winds as strong as 185 mph for 37 hours.”¹¹³

In the Caribbean, Hurricane Irma was sheer power. According to one reporter, “its coastal storm surges were 20 feet above normal tide levels,” and the hurricane “held 7 trillion watts of energy. That’s twice as much as all bombs used in World War II. Its force was so powerful that earthquake seismometers recorded it. It generated the most accumulated cyclone energy in a 24-hour period.”¹¹⁴

Irma made landfall eight times.¹¹⁵ Along the way, it knocked out power in Puerto Rico (September 7) and dumped 15 inches of rain on Haiti and the Dominican Republic (September 7).¹¹⁶ In Barbuda, Hurricane Irma damaged 90% of the buildings, “destroyed almost all communication, and left 60 percent of the population homeless.”¹¹⁷ In the hurricane’s wake, Barbuda was entirely evacuated, and few people have returned.¹¹⁸ In the British Virgin Islands, “Hurricane Irma made two direct landfalls . . . both at peak

109. Doyle Rice, *2017’s Three Monster Hurricanes—Harvey, Irma, and Maria—Among Five Costliest Ever*, USA TODAY (Jan. 30, 2018, 2:54 PM), <https://www.usatoday.com/story/weather/2018/01/30/2017-s-three-monster-hurricanes-harvey-irma-and-maria-among-five-costliest-ever/1078930001/>; see Jonathan Belles, *2017 Atlantic Hurricane Season Recap: 17 Moments We’ll Never Forget*, WEATHER CHANNEL (Nov. 28, 2017, 9:45 AM), <https://weather.com/storms/hurricane/news/2017-11-11-moments-hurricane-season-atlantic-irma-maria-harvey> (“Irma’s peak intensity based on wind speed was the second highest in Atlantic basin history only behind Hurricane Allen in 1980, which had winds of 190 mph.”); *Irma: A Hurricane for the History Books*, CNN, <https://www.cnn.com/specials/hurricane-irma> (last visited Feb. 19, 2018) (“Hurricane Irma is the strongest Atlantic basin hurricane ever recorded outside the Gulf of Mexico and the Caribbean Sea.”).

110. *Irma: A Hurricane for the History Books*, *supra* note 109.

111. *Id.*

112. *Id.*

113. *Id.*; see Amadeo, *supra* note 82 (“It beat Super Typhoon Haiyan, which maintained winds at that level for 24 hours in 2013.”).

114. Amadeo, *supra* note 82.

115. The eight landfalls were: Barbuda on September 6 (Category 5, 185 mph); St. Martin (Category 5, 185 mph); British Virgin Islands (two landfalls, Category 5, 185 mph); Little Inagua, Bahamas (Category 5, 160 mph); northern Cuba on September 9, flooding Havana (Category 3-4, 125-160 mph); Florida Keys on September 10 (Category 4, 130 mph); and finally, in southwest Florida (Category 3, 115 mph). *Compiled from* Amadeo, *supra* note 82; Belles, *supra* note 109; *Irma: A Hurricane for the History Books*, *supra* note 109.

116. Amadeo, *supra* note 82.

117. *Id.*

118. Belles, *supra* note 109.

intensity; one on Tortola and another on Ginger Island. Damage in the [British Virgin Islands] was extensive, and on some islands, it was catastrophic. Many buildings and roads were left in ruins.”¹¹⁹ The hurricane then traveled to the U.S. Virgin Islands, decimating St. John,¹²⁰ before traveling the entire length of Florida from south to north.¹²¹ The Florida Keys endured 12 inches of rain and a storm surge of 10 feet.¹²² “The most rain in the state fell on Fort Pierce. It received 15.9 inches. The strongest winds (142 mph) hit Naples.”¹²³ At least 102 people died from the storm, 75 in Florida alone.¹²⁴

According to the National Hurricane Center, Hurricane Irma was the fifth costliest tropical storm in the United States, causing \$50 billion in damage.¹²⁵ Within the United States, Hurricane Irma’s primary victims were in Florida. When Irma made landfall in Florida, the state contained 1.7 million NFIP policyholders, representing 35% of NFIP participants nationwide.¹²⁶ Moreover, 15,000 Florida homes are NFIP repetitive-loss properties.¹²⁷ NFIP policyholders damaged by Hurricane Irma had received \$179 million in payouts as of early November 2017.¹²⁸ By March 2018, FEMA had paid out \$860 million under the NFIP program.¹²⁹

C. Hurricane Maria: The Devastation of Puerto Rico

After forming as a tropical storm on September 16, 2017, Maria rapidly intensified into a Category 5 hurricane. It first made landfall on September

119. *Id.*

120. *Id.*

121. Lisa J. Huriash, *Florida Death Toll from Hurricane Irma Keeps Rising*, SUN SENTINEL (Nov. 22, 2017, 9:00 PM), <http://www.sun-sentinel.com/news/weather/hurricane/fl-reg-hurricane-irma-deaths-20171120-story.html>.

122. Amadeo, *supra* note 82.

123. *Id.*

124. *Id.*

125. *Costliest U.S. Tropical Cyclones Tables Updated*, *supra* note 98, at 1, 2 tbl. 3a (Jan. 26, 2018), <https://www.nhc.noaa.gov/news/UpdatedCostliest.pdf>.

126. Justin Worland, *A Devastating Hurricane Season Exposes America’s Flood Insurance Problem*, YAHOO! (Sept. 9, 2017), <https://www.yahoo.com/news/devastating-hurricane-season-exposes-america-143733243.html>.

127. *Id.*

128. Bob Fredericks, *Why FEMA Has Paid Puerto Rico Just \$121K in Wake of Hurricane Maria*, N.Y. POST (Nov. 3, 2017, 10:40 PM), <https://nypost.com/2017/11/03/why-fema-has-paid-puerto-rico-just-121k-in-wake-of-hurricane-maria/>.

129. FED. EMERGENCY MGMT. AGENCY, DEP’T OF HOMELAND SEC. & FLA. STATE ENF’T RESPONSE TEAM, *HURRICANE RECOVERY MOVES FORWARD: SIX MONTHS AFTER HURRICANE IRMA IN FLORIDA 1* (2018), <https://www.fpnetwork.org/sites/default/files/resources/Irma%20in%20Florida%206%20month%20recap%20March%207.pdf>.

18 on Dominica, devastating the island.¹³⁰ Maria also battered the U.S. Virgin Islands for a second time, and about 80% of those islands remained without power for more than a month.¹³¹

What Hurricane Maria is infamous for, however, is its destruction of the U.S. territory of Puerto Rico. On September 20, Maria made landfall on Puerto Rico as a Category 4 hurricane,¹³² “the strongest storm to hit Puerto Rico in 85 years.”¹³³ It eliminated electricity to almost all of the island and heavily damaged the power grid.¹³⁴ It also cut off water delivery, disrupted cell phone service,¹³⁵ and destroyed Puerto Rico’s radar.¹³⁶ On September 22, “[t]he National Weather Service order[ed] the evacuation of about 70,000 people living near the Guajataca River in northwest Puerto Rico because a dam [wa]s in danger of failing.”¹³⁷

The death toll in Puerto Rico from Hurricane Maria has become its own political controversy. According to original official tallies, 64 people died because of the storm, but in January 2018 some news agencies put the number closer to 1,000,¹³⁸ and by late May 2018 the calculated estimate had risen to 4,645 deaths, “many of them from delayed medical care.”¹³⁹ In late August 2018, the Puerto Rico government settled on 2,975 fatalities as its official death toll.¹⁴⁰ However, controversy erupted again in September 2018

130. 2017 *Atlantic Hurricane Season Fast Facts*, CNN (Dec. 15, 2017), <https://www.cnn.com/2017/05/15/us/2017-atlantic-hurricane-season-fast-facts/index.html>.

131. Belles, *supra* note 109.

132. Umair Irfan, *One of the Clearest Signs of Climate Change in Hurricanes Maria, Irma, and Harvey Was the Rain*, VOX (Sept. 29, 2017, 9:46 AM), <https://www.vox.com/energy-and-environment/2017/9/28/16362522/hurricane-maria-2017-irma-harvey-rain-flooding-climate-change>.

133. 2017 *Atlantic Hurricane Season Fast Facts*, *supra* note 130.

134. *Id.*

135. Belles, *supra* note 109.

136. *Id.*

137. *Id.*

138. Norbert Figueroa, *How Hurricane Maria Forced Puerto Ricans to Change Their Hair*, GUARDIAN (Jan. 24, 2018, 5:00 AM), <https://www.theguardian.com/world/2018/jan/24/puerto-rico-hurricane-maria-hairstyles>.

139. Sheri Fink, *Puerto Rico’s Hurricane Maria Death Toll Could Exceed 4,000*, *New Study Estimates*, N.Y. TIMES (May 29, 2018) <https://www.nytimes.com/2018/05/29/us/puerto-rico-deaths-hurricane.html>. It is worth noting that while the Harvard study that generated this estimate has been subject to critique, almost all counts put the death toll significantly higher than the original official count of sixty-four. See Glenn Kessler, *Did 4645 People Die in Hurricane Maria? Nope.*, WASH. POST (June 1, 2018) https://www.washingtonpost.com/news/fact-checker/wp/2018/06/02/did-4645-people-die-in-hurricane-maria-nope/?noredirect=on&utm_term=.933269211614.

140. Nicole Darrah, *Puerto Rico Governor Raises Hurricane Maria Death Toll from 64 to 2,975*, FOX NEWS (Aug. 28, 2018), <https://www.foxnews.com/us/puerto-rico-governor-raises-hurricane-maria-death-toll-from-64-to-2975>; Leyla Santiago, Catherine E. Shoichet & Jason Kravarik, *Puerto Rico’s New Hurricane Maria Death Toll Is 46 Times Higher Than the*

when President Donald Trump denied by tweet that nearly 3,000 people had died, claiming that the real number was more like 20 deaths and that the “inflated” number was a Democratic plot to make him look bad.¹⁴¹

Whatever the exact death toll from Hurricane Maria might have been in Puerto Rico, the U.S. government did receive serious criticism for not adequately responding to Puerto Rico’s devastation.¹⁴² Hurricane Maria “destroyed thousands of homes, killed at least 64 people and left thousands without electricity or water for months.”¹⁴³ A month after the hurricane, about 35% of Puerto Rico’s 3.4 million residents still lacked access to clean water, and FEMA’s emergency provisions appeared to many to fall far short of basic human needs.¹⁴⁴ As of late January 2018, “about 60,000 homes [were] still without roofs, 2.3 million people live[d] in areas at risk of water contamination, and 15.5% of the population still lack[ed] electricity.”¹⁴⁵ By mid-February 2018, “99% of customers in Puerto Rico had running water, and 84% of the island had power back,” but “[m]ore than 400,000 customers still [did not] have electricity.”¹⁴⁶ Despite a FEMA error that sparked fears that aid to the island was ending, that aid continues.¹⁴⁷ By June 2018, most of the island had its electricity restored, at least intermittently, but hundreds of schools threatened to close for the 2018-2019 academic year.¹⁴⁸

Government’s Previous Count, CNN (Aug. 28, 2018, 6:25 PM), <https://www.cnn.com/2018/08/28/health/puerto-rico-gw-report-excess-deaths/index.html>.

141. William Cummings, *Outpourings of Outrage Fill Twitter After Trump Denies Hurricane Maria’s 3,000 Death Toll*, USA TODAY (Sept. 13, 2018, 1:03 PM), <https://www.usatoday.com/story/news/politics/onpolitics/2018/09/13/trump-denial-hurricane-maria-death-toll-puerto-rico-fuels-fury/1288530002/> (republishing President Trump’s tweets, as well).

142. E.g., Robinson Meyer, *What’s Happening with the Relief Effort in Puerto Rico?*, ATLANTIC (Oct. 4, 2017) <https://www.theatlantic.com/science/archive/2017/10/what-happened-in-puerto-rico-a-timeline-of-hurricane-maria/541956/>.

143. Rick Jervis, *‘Five Months Without Power’: Blackout Is Latest Snag in Puerto Rico’s Long Recovery from Hurricane Maria*, USA TODAY (Feb. 13, 2018, 11:08 AM), <https://www.usatoday.com/story/news/2018/02/12/power-outage-puerto-rico-latest-snap-islands-long-recovery-hurricane-maria/329322002/>.

144. John D. Sutter, *About 1 Million Americans Without Running Water. 3 Million Without Power. This Is Life One Month After Hurricane Maria*, CNN, (Oct. 20, 2017, 3:11 PM), <https://www.cnn.com/2017/10/18/health/puerto-rico-one-month-without-water/index.html>.

145. Figueroa, *supra* note 138.

146. Jervis, *supra* note 143.

147. Patricia Mazzei, *A FEMA Error Drove Fears That Food and Water Aid to Puerto Rico Was Ending. It’s Not*, N.Y. TIMES (Jan. 31, 2018), <https://www.nytimes.com/2018/01/31/us/puerto-rico-fema-aid.html>.

148. Gabe Gutierrez & Bianca Seward, *Puerto Rico 9 month after Hurricane Maria: Questions Persist over Death Toll, Closed Schools*, NBC NEWS (June 17, 2018, 6:08 PM), <https://www.nbcnews.com/storyline/puerto-rico-crisis/puerto-rico-9-months-after-hurricane-maria-questions-persist-over-n883921>.

Hurricane Maria clearly tested Puerto Rico's resources. "From a meteorological standpoint, Maria was nearly a worst-case scenario for the territory: The center of a huge, nearly Category 5 hurricane made a direct hit on Puerto Rico, lashing the island with wind and rain for longer than 30 hours."¹⁴⁹ However, the NFIP played little role in Puerto Rico's recovery. The NFIP applies in Puerto Rico through MAPFRE, which sells flood insurance policies for island properties pursuant to a contract with FEMA.¹⁵⁰ Moreover, on November 1, 2017, FEMA made it easier for policyholders damaged by Maria to make claims, including a \$20,000 advance.¹⁵¹ However, most homeowners on the island lacked even basic wind damage insurance,¹⁵² let alone a NFIP policy for flooding—there were only 5,675 NFIP policies in force on Puerto Rico, an island with 1.57 million housing units.¹⁵³ As a result, Puerto Rican homeowners have been paid only \$121,000 under the program.¹⁵⁴ Instead of experiencing recovery through insurance, Puerto Rico has relied far more extensively on federal disaster relief, resurrecting the federal role in dealing with flooding that Congress intended the NFIP to replace.¹⁵⁵

Nevertheless, even though Hurricane Maria is not contributing much to the NFIP's debt, it now ranks as the third costliest hurricane in U.S. history. It caused \$90 billion in damages, less than Hurricanes Katrina and Harvey but more than Hurricane Sandy.¹⁵⁶

D. What Should the 2017 Hurricane Season Mean for the NFIP?

Together, Hurricanes Harvey, Irma, and Maria made 2017 the costliest hurricane season in U.S. history, surpassing the previous record set in 2005,

149. Meyer, *supra* note 142.

150. *Flood Insurance*, MAPFRE, <https://www.mapfre.pr/insurance-pr/personal-insurance/property-contingency/flood/> (last visited Feb. 19, 2018).

151. *FEMA's National Flood Insurance Program Enhances the Flood Claims Process and Extends Grace Period for Policy Renewals*, FEMA (Nov. 1, 2017), <https://www.fema.gov/news-release/2017/11/01/4339/femas-national-flood-insurance-program-enhances-flood-claims-process-and>.

152. Leslie Scism & Nicole Friedman, *Hurricane Maria Exposes a Common Problem for Puerto Rican Homeowners: No Insurance*, WALL STREET J. (Sept. 20, 2017, 4:51 PM), <https://www.wsj.com/articles/hurricane-maria-exposes-a-common-problem-for-puerto-rico-homeowners-no-insurance-1505940660>.

153. Tim Johnson & Kevin G. Hall, *Few Puerto Rican Households Had Flood Insurance. They Can't Afford It*, MIAMI HERALD (Oct. 12, 2017, 11:02 AM), <http://www.miamiherald.com/latest-news/article178346336.html>.

154. Fredericks, *supra* note 128.

155. See, e.g., *Six Months After Maria: Progress Made, Work Continues*, FEMA (Mar. 16, 2018), <https://www.fema.gov/news-release/2018/03/16/six-months-after-maria-progress-made-work-continues> (describing federal relief efforts).

156. *Costliest U.S. Tropical Cyclones Tables Updated*, *supra* note 98, at 1, 2 tbl. 3a.

the year of Hurricanes Katrina, Rita, and Wilma.¹⁵⁷ The season had some other notable features, as well. First, in 2017, “[s]eventeen named storms, 10 hurricanes, and 6 major (Category 3 or stronger) hurricanes tore through the Atlantic Basin, well above the 30-year average of 12 storms, 6 hurricanes and 2 major hurricanes. This placed 2017 among the top 10 most active Atlantic seasons on record”¹⁵⁸

Second, Tropical Storm Arlene, the first of the season, formed on April 20, 2017, “more than a month before the beginning of hurricane season [and] the second earliest-forming tropical cyclone in the Atlantic in the satellite era (or since 1966).”¹⁵⁹ Third, Hurricane Maria, like Hurricane Irma, reached Category 5 strength, making 2017 only the second hurricane season in which two Category 5 storms made landfall.¹⁶⁰ Fourth, two Category 4 hurricanes made landfall on the continental United States in 2017, the first time that has happened since hurricane records were started in 1851.¹⁶¹ Fifth, Irma, Jose and Katia were all active in the Atlantic Ocean at the same time, the first time since 2010 that three hurricanes existed simultaneously.¹⁶² Sixth, in October 2017, Ophelia became the tenth consecutively named storm to achieve hurricane status, the fourth recorded time—and first time

157. Rice, *supra* note 109; see also Willie Drye, *2017 Hurricane Season Was the Most Expensive in U.S. History*, NAT’L GEOGRAPHIC (Nov. 30, 2017), <https://news.nationalgeographic.com/2017/11/2017-hurricane-season-most-expensive-us-history-spd/> (“U.S. suffered more than \$200 billion worth of damage from 17 named storms during the season. . . . That easily eclipses the previous record of about \$159 billion, set during the summer of 2005, when Hurricane Katrina inflicted massive devastation on New Orleans. A record 28 named storms formed that year.”).

158. Belles, *supra* note 109; see also *Extremely Active 2017 Atlantic Hurricane Season Finally Ends*, NOAA (Nov. 30, 2017), <http://www.noaa.gov/media-release/extremely-active-2017-atlantic-hurricane-season-finally-ends> (“The season produced 17 named storms of which 10 became hurricanes including six major hurricanes (Category 3, 4 or 5)—including the first two major hurricanes to hit the continental U.S. in 12 years.”). Besides Hurricanes Harvey, Irma, and Maria, the named storms included Arlene (tropical storm, central Atlantic), Bret (tropical storm, near Trinidad), Cindy (tropical storm, landfall in Texas/Louisiana), Don (tropical storm, east-southeast of Barbados), Emily (tropical storm, landfall in Florida), Franklin (Category 1 hurricane, landfall in Mexico), Gert (Category 1 hurricane, stayed in the Atlantic Ocean), Jose (Category 4 hurricane, east-southeast of Leeward Islands), Katia (Category 1 hurricane, landfall in Mexico), Lee (Category 3 hurricane, west-southwest of Cabo Verde islands), Nate (Category 1 hurricane, landfall in Mississippi/Louisiana), Ophelia (Category 3 hurricane, northeast Atlantic, landfall as a tropical storm in Ireland), Philippe (tropical storm, landfall in Florida), and Rina (tropical storm, east of Bermuda). Compiled from *2017 Atlantic Hurricane Season Fast Facts*, *supra* note 130; *Extremely Active 2017 Atlantic Hurricane Season Finally Ends*, *supra* note 158; Belles, *supra* note 109.

159. Belles, *supra* note 109.

160. Rice, *supra* note 109.

161. *Id.*; see also Amadeo, *supra* note 82 (“Irma’s attack was the first time in 100 years that two storms Category 4 or larger hit the U.S. mainland in the same year.”).

162. *Irma: A Hurricane for the History Books*, *supra* note 109.

since 1893—that ten consecutive hurricanes have occurred in one season.¹⁶³ Notably, Ophelia also traveled to Wales, Scotland, and Ireland.¹⁶⁴ Finally, “September 2017, featuring Category 5 Hurricanes Irma and Maria and Category 4 Hurricane Jose, was the most active month of any Atlantic hurricane season on record in terms of Accumulated Cyclone Energy (ACE).”¹⁶⁵ The September 2017 storms also included Irma, Jose, Katia, Lee and Maria.¹⁶⁶

As the studies linking climate change to Hurricane Harvey’s severe rainfall suggest, evidence indicates that climate change is making Atlantic hurricanes likelier, stronger, and more frequent. In 2008, researchers noted that Atlantic hurricanes had been getting stronger on average over the last thirty years.¹⁶⁷ Notably, “Hurricane Patricia, in 2015, set the record at the time for top wind speed—215 miles per hour—in the north Atlantic. The next year Winston shattered records as the most intense cyclone in the Southern Hemisphere.”¹⁶⁸ Climate models also predict more Category 4 and 5 storms,¹⁶⁹ and warming ocean waters will continue to fuel hurricanes as they did in 2017, when “[u]nusually warm water in the area where hurricanes form in the Atlantic Ocean fueled the powerful storms, which formed when the peak of the season arrived in late August.”¹⁷⁰ Overall, scientists conclude that storm events like Hurricane Harvey will become more common.¹⁷¹ Some commentators even call the 2017 hurricane season a harbinger of what climate change means for the coasts.¹⁷²

Climate change and its effects on coastal storms thus pose a real problem for the NFIP when it comes to coastal properties, because current insurance is not structured to reflect the need for climate change adaptation. As Edward Richards has summarized, “The role of insurance in driving

163. Belles, *supra* note 109.

164. *Id.*

165. *Id.* According to NOAA:

Based on the Accumulated Cyclone Energy index, which measures the combined intensity and duration of the storms during the season and is used to classify the strength of the entire hurricane season, 2017 was the seventh most active season in the historical record dating to 1851 and was the most active season since 2005.

Extremely Active 2017 Atlantic Hurricane Season Finally Ends, *supra* note 158.

166. Belles, *supra* note 109.

167. James B. Elsner, James P. Kossin & Thomas H. Jagger, *The Increasing Intensity of the Strongest Tropical Cyclones*, 445 NATURE 92, 92 (2008).

168. Annie Sneed, *Was the Extreme 2017 Hurricane Season Driven by Climate Change?*, SCI. AM. (Oct. 26, 2017), <https://www.scientificamerican.com/article/was-the-extreme-2017-hurricane-season-driven-by-climate-change/>.

169. *Id.*

170. Drye, *supra* note 157.

171. Kerry Emanuel, *Assessing the Present and Future Probability of Hurricane Harvey’s Rainfall*, 114 PROC. NAT’L ACAD. SCI., 12,681, 12,681–84 (2017).

172. Drye, *supra* note 157.

adaptation is limited because most insured risks are short-term weather risks that are not tightly linked to climate change during the time period of the typical insurance policy.”¹⁷³

The 2017 hurricane season certainly had an effect on the NFIP’s fiscal stability. In the wake of that season, the NFIP reached its approximately \$30 billion borrowing limit, prompting Congress in October 2017 to forgive \$16 billion of the program’s debt.¹⁷⁴ However, continuing claims from the storms led the program to borrow another \$6.1 billion in early November 2017, bringing its debt back up to more than \$20.5 billion.¹⁷⁵ As of early December 2017, Harvey, Irma, and Maria had generated more than 120,000 NFIP policy claims, for which FEMA had paid \$6.687 billion.¹⁷⁶ FEMA expects payouts for the three hurricanes to total between \$8.5 and \$9.5 billion.¹⁷⁷ Moreover, costs of the NFIP program are only expected to increase over time. For example, “[i]n 2016, the non-partisan CBO estimated that damage from hurricanes costs roughly \$28 billion per year. Over the next 60 years, those costs are expected to rise at least 40%, after adjusting for inflation.”¹⁷⁸

Despite these fiscal impacts, however, the NFIP has not been updated for climate change; instead, the program assesses risk—and calculates premiums—based on *historical* flood data.¹⁷⁹ As Hurricane Harvey so aptly demonstrated in 2017, historical data no longer accurately reflects the geographical extent or future likelihood of potential flood damage from hurricanes. As a result, without substantial reforms, the NFIP’s coverage of coastal properties is likely to diverge from reality even more than the CBO projected in 2016.

Indeed, the CBO itself, in preparing advice to Congress in September 2017, was well aware that climate change could complicate coastal flooding and the NFIP’s solvency. As one source of uncertainty, for example, it noted “scientists are seeking to better understand how climate change might affect sea surface temperatures and wind shear and how these changes, in turn, could affect the frequency and intensity of hurricanes.”¹⁸⁰ In addition, it

173. Richards, *supra* note 13, at 428.

174. Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2017, Pub. L. No. 115-72, § 308, 131 Stat. 1224; *see also* Zachary Warmbrodt, *House Passes Flood Insurance Renewal in Wake of Massive Storms*, POLITICO (Nov. 14, 2017, 7:38 PM), <https://www.politico.com/story/2017/11/14/house-passes-flood-insurance-reauthorization-244908> (discussing this history).

175. Warmbrodt, *supra* note 174.

176. *FEMA Will Recover \$1.042 Billion in Reinsurance from the Private Reinsurance Markets*, *supra* note 102.

177. *Id.*

178. Worland, *supra* note 126.

179. Blask & Brannon, *supra* note 99; Warmbrodt, *supra* note 174.

180. CONG. BUDGET OFF., *supra* note 68, at 10.

noted that, “in the coming decades, coastal development and the effects of climate change are expected to increase property damage from coastal flooding. Climate change could increase damage by raising sea levels and potentially also by increasing the intensity of hurricanes.”¹⁸¹ Nevertheless, it remains to be seen whether Congress will incorporate climate change and its effects on coastal storms into account in reauthorizing the NFIP, the subject to which this article now turns.

IV. THE 2017-2018 NFIP REAUTHORIZATION PROCESS: IS CONGRESS THINKING ABOUT HURRICANES AND CLIMATE CHANGE?

As the discussions above make clear, the impacts of climate change and coastal storms on coastal properties create real financial problems for the NFIP. The reauthorization process in 2017 and 2018 thus provided an opportunity for Congress to use the NFIP as a means both to educate the American public about the real risks of living along the Gulf of Mexico and southeastern coast and to reform the law to dis-incentivize continued coastal development. At the same time, if Congress chooses to amend the NFIP to reward state, local, and homeowner efforts to mitigate storm damage, the program could effectively encourage active climate change adaptation along coasts. As the *Union of Concerned Scientists* has recommended, “[r]eforming our insurance system to reflect this growing exposure can help communicate the true risks to coastal communities so they are motivated to take protective steps.”¹⁸²

The question, of course, is whether Congress will make the most of this opportunity. This part reviews the 2017-2018 NFIP reauthorization process for signs that hurricanes and climate change matter.

A. Hurricanes and the *Last* NFIP Reauthorization

Hurricanes have prompted congressional reforms of the NFIP in the past, although those reforms were short lived. In 2012, the year of “Superstorm” Sandy, Congress enacted the Biggert-Waters Flood Insurance Reform Act (“Biggert-Waters”)¹⁸³ “to eliminate the NFIP’s debt by increasing flood insurance rates to reflect the true cost of owning coastal property.”¹⁸⁴ This Act introduced the concepts of the 100-year and 500-year floodplain,¹⁸⁵ and it provided for a national flood mapping program.¹⁸⁶ It

181. *Id.* at 17.

182. UNION OF CONCERNED SCIENTISTS, *supra* note 32, at 2.

183. Pub. L. No. 112-141, 126 Stat. 916 (2012) (amending scattered sections of the National Flood Insurance Act of 1968, 42 U.S.C. §§ 4001–4131).

184. Schweitzer, *supra* note 36, at 250.

185. Pub. L. No. 112-141, § 100202(a)(1) & (2).

tried to eliminate subsidized flood insurance for certain properties, including repetitive-loss properties,¹⁸⁷ and it raised the rate at which premiums could be increased.¹⁸⁸ In addition, the Act required that premiums reflect the real flood risk that properties face:

[A]ny property located in an area that is participating in the national flood insurance program shall have the risk premium rate charged for flood insurance on such property adjusted to accurately reflect the current risk of flood to such property, subject to any other provision of this Act. Any increase in the risk premium rate charged for flood insurance on any property that is covered by a flood insurance policy on the effective date of such an update that is a result of such updating shall be phased in over a 5-year period, at the rate of 20 percent for each year following such effective date.¹⁸⁹

The Act also intended to phase out grandfathering, “a practice that enables property owners to keep their old premium prices when a new FEMA flood map reclassifies them into a higher-risk flood zone.”¹⁹⁰

Biggert-Waters “represented a bipartisan effort to improve actuarial soundness and program solvency.”¹⁹¹ Less publicized is Biggert-Waters’s acknowledgement that coastal flooding was an increasingly important threat to the nation. In addition to amending the NFIA, Biggert-Waters amended the Integrated Coastal and Ocean Observation System Act of 2009¹⁹² to require the development of a Named Storm Event Model. The model must be at least 90% accurate and be able to identify named tropical storms and hurricanes that pose a threat to coastal states and generate post-storm assessments.¹⁹³ This model would then be used to help calculate loss allocations between wind and water for indeterminate losses—generally, properties completely destroyed by a storm—along the coast.¹⁹⁴

Biggert-Waters represents one swing of the congressional pendulum regarding the NFIP, toward fiscal solvency. However, fiscal solvency measures can run counter to political will and the desires of coastal property owners to avoid facing the true costs of the risks they are incurring. Indeed,

186. *Id.* § 100216.

187. *Id.* § 100205(a).

188. *Id.* § 100205(c).

189. *Id.* § 100207.

190. Schweitzer, *supra* note 36, at 251.

191. Tarlock & Chizewer, *supra* note 29, at 521.

192. Pub. L. No. 111-11, tit. 12, § 12301, 123 Stat. 1427 (2009), (codified at 33 U.S.C. §§ 3601–3611), *amended by* Pub. L. No. 112-141 § 100252.

193. Pub. L. No. 112-141 § 100252 (amending 33 U.S.C. § 3611).

194. *Id.* § 100253; *see also* *COSTAL Act: Overview*, NAT’L WEATHER SERV., <https://www.weather.gov/sti/coastalact> (last visited Feb. 23, 2018) (explaining how the Named Storm Event Model influences FEMA’s indeterminate loss calculations).

coastal property owners responded to Biggert-Waters's enactment with panic and opposition,¹⁹⁵ and with some justification. Following the amendment's enactment, according to the GAO, "about 438,000 policies nationwide had higher premiums immediately,"¹⁹⁶ and some of the increases were substantial. For example, many New Yorkers faced increases in their annual flood insurance premiums of between \$10,000 and \$15,000.¹⁹⁷ In 2013, one woman in Massachusetts "was hit with a \$68,000 insurance bill."¹⁹⁸

As a result of this political backlash, Biggert-Waters's reforms were short-lived. Opposition "culminated in the passage of the Homeowner Flood Insurance Affordability Act of 2014^[199] . . . which repealed many key provisions of Biggert-Waters."²⁰⁰ This Act "favors a more gradual increase to full-risk premiums and thus softens the 'blow' of Biggert-Waters on coastal homeowners."²⁰¹ "[P]olicyholders in high-risk areas who purchased flood insurance after Biggert-Waters went into effect, and had to pay a full-risk rate, are eligible for a refund under the Act."²⁰² Thus, after 2014, the NFIP policy pendulum swung back to subsidizing coastal development, obscuring again the true costs of living on the coast in an age of climate change, rising seas, and worsening storms.

B. The CBO's Recommended Twelve Policy Approaches in 2017

In its September 2017 report on the NFIP, the CBO identified for Congress twelve policy approaches that the reauthorization legislation could take. The CBO grouped these suggestions into four categories—increase receipts; reduce subsidies; shift costs away from the NFIP; and adjust premiums to better reflect underlying risk factors—and evaluated them against three potential congressional goals: improving the program's solvency; better aligning premiums and risk; and keeping costs low for policyholders.²⁰³

195. Jenny Anderson, *Outrage as Homeowners Prepare for Substantially Higher Flood Insurance Rates*, N.Y. TIMES (July 28, 2013), <http://www.nytimes.com/2013/07/29/nyregion/overhaul-and-a-hurricane-have-flood-insurance-rates-set-for-huge-increases.html>.

196. Schweitzer, *supra* note 36, at 250.

197. Anderson, *supra* note 195.

198. Ella Nilsen, *The National Flood Insurance Program was already \$24 billion in Debt Before Harvey and Irma*, VOX (Sept. 11, 2017, 3:08 PM), <https://www.vox.com/2017/8/26/16208230/hurricane-harvey-flood-damage>.

199. Pub. L. No. 113-89, 128 Stat. 1020 (amending 42 U.S.C. §§ 4001–4131(2014)).

200. Fox, *supra* note 22, at 208–09.

201. Schweitzer, *supra* note 36, at 251.

202. *Id.* at 252.

203. CONG. BUDGET OFF., *supra* note 68, at 23 tbl. 6.

These potential congressional goals are, of course, tradeoffs; in particular, as Biggert-Waters demonstrated, the goals of improving the NFIP's solvency and of keeping costs low for *all* policyholders are in considerable tension. Thus, as might be expected, no single policy option that the CBO suggested can achieve all three posited goals for the NFIP's reauthorization.²⁰⁴ For example, shortening the phase-out period for discounted premium rates would improve the program's solvency and better align premium payments with actual risk, but this approach would increase the costs to policyholders.²⁰⁵ In contrast, adjusting premium rates to reflect the property's actual value would better align premium payments with actual risk and would keep costs low for owners of lower-value properties. However, this approach does have drawbacks, because it would not improve the program's solvency, and rates could go up for owners of higher-value properties.²⁰⁶ Recognizing that Congress has vacillated regarding its policy priorities for the NFIP in the past,²⁰⁷ the CBO did not recommend any particular course of action for the NFIP reauthorization.

C. NFIP Reauthorization Efforts

In general, Congress reauthorizes the NFIP roughly every five years. After its 2012 reauthorization, the NFIP was set to expire on September 30, 2017.²⁰⁸ Thus, Congress was expected to reauthorize the NFIP by the end of September 2017. Instead, Congress has delayed the reauthorization process, extending through and well beyond the highly destructive 2017 hurricane season, potentially allowing that season to influence the reauthorization's substance. As of January 2019, the NFIP remains in reauthorization limbo, while a series of congressional actions have repeatedly extended the program's effective date by a few months each time, ending (as of late December 2018) on May 31, 2019.²⁰⁹ As a result, Congress allowed the

204. *Id.*

205. *Id.*

206. *Id.*

207. *Id.*

208. See Pub. L. No. 115-56, § 130, 131 Stat. 1129 (2017) (extending the date from September 30, 2017).

209. *Id.* (extending the NFIP to December 8, 2017); Bryn Stole, *Congress Approves Short-Term Extension for National Flood Insurance Program*, ACADIANA ADVOC., (Dec. 7, 2017, 6:00 PM), http://www.theadvocate.com/acadiana/news/politics/article_5a8d0ffc-dba6-11e7-946c-9391fd96c07a.html (reporting the extension of the NFIP from December 8 to December 22, 2017); Gloria Gonzalez, *NFIP Extended to Jan. 19*, BUS. INS. (Dec. 22, 2017, 11:40 AM), <http://www.businessinsurance.com/article/00010101/NEWS06/912318110/NFIP-extended-to-Jan-19> (reporting the extension of the NFIP to January 19, 2018); Jeffrey Forbes, *President Trump Extends National Flood Insurance Program, But Concerns Remain*, ECBM BLOG (Feb. 1, 2018, 9:00 AM), <https://blog.ecbm.com/president-trump-extends-nfip-national-flood-insurance-program-2018> (reporting that on January 22 the NFIP was extended

United States to enter the 2018 hurricane season without a fully reauthorized NFIP—or a clear statement of what the potentially new requirements might be. In the meantime, the 2018 hurricane season produced fifteen named storms by the end of October, eight of which strengthened into hurricanes²¹⁰ and two of which—Florence²¹¹ and Michael²¹²—produced serious impacts in the Carolinas and Florida, respectively. While the NFIP extensions provided coverage to the victims of these storms, the 2018 hurricane season, like the 2017 hurricane season, prompted calls to rethink the NFIP.²¹³

Notably, the House of Representatives acted on NFIP reauthorization, perhaps setting the terms of the congressional reauthorization discussion that will carry into the new Congress. On November 14, 2017, it passed House Bill 2874, The 21st Century Flood Insurance Reform Act,²¹⁴ by a 237-189 vote.²¹⁵ While “[t]he House Financial Services Committee drafted the legislation well before hurricanes Harvey, Irma, and Maria ravaged the southern coast of the United States and its territories[,] . . . the monster storms added a new sense of urgency behind efforts to update the flood insurance program.”²¹⁶

House Bill 2874 would extend the NFIP for five years beyond its original September 2017 expiration.²¹⁷ It contains measures both to improve the affordability of NFIP insurance and to more accurately reflect the risks

to February 8, 2018); Pub. L. No. 115-123, 132 Stat. 64 (2018) (extending all federal budgets to March 23, 2018); Pub. L. No. 115-141, § 301, 132 Stat. 348, 1049 (2018) (extending the NFIP to July 31, 2018); Pub. L. No. 115-225, § 1, 132 Stat. 1624 (2018) (extending the NFIP to November 30, 2018); Pub. L. No. 115-281, § 1, 132 Stat. 4191 (2018) (extending the NFIP to December 7, 2018); Pub. L. No. 115-396, § 1, 132 Stat. 5296 (2018) (extending the NFIP to May 31, 2019, retroactive to December 7, 2018).

210. Chris Dolce, *5 Reasons the 2018 Hurricane Season Has Been Unusual*, WEATHER CHANNEL (Oct. 29, 2018), <https://weather.com/storms/hurricane/news/2018-10-29-2018-atlantic-hurricane-season-unusual/>.

211. Hurricane Florence made landfall in North Carolina on September 14, 2018, and may be “the worst flooding event in East Coast history.” Kevin Loria, *Before-and-After Satellite Photos Show the Staggering Amount of Water Hurricane Florence Dumped on North Carolina*, BUS. INSIDER (Sept. 21, 2018, 4:12 PM), <https://www.businessinsider.com/hurricane-florence-damage-in-satellite-images-2018-9>.

212. Florida Governor Rick Scott called Hurricane Michael the worst storm to hit the Florida panhandle in a century. Morrigan McCarthy, *Hurricane Michael: The Damage in Pictures*, N.Y. TIMES (Oct. 15, 2018), <https://www.nytimes.com/2018/10/11/us/photos-hurricane-michael-damage.html>.

213. E.g., Patrick Sisson, *Flood Insurance Is Broken: Hurricane Florence Underscores How Our Current System of Rebuilding After Storms Can’t Afford a Future of More Frequent and Powerful Weather*, CURBED (Sept. 20, 2018, 5:40 PM), <https://www.curbed.com/2018/9/20/17884382/hurricane-florence-storm-flood-climate-change-insurance>.

214. H.R. 2874, 115th Cong. (1st Sess. 2017).

215. Warmbrodt, *supra* note 174.

216. *Id.*

217. H.R. 2874, § 101 (extending the NFIP to September 22, 2017).

to coastal properties. It also includes a variety of transparency measures intended to ensure that property owners understand both their insurance premiums and the flood risks they face.

Regarding affordability measures, House Bill 2874 first reduces the cap on annual increases in premiums from 18% to 15%.²¹⁸ It also authorizes states to create flood insurance affordability programs for low-income policyholders.²¹⁹ After FEMA approves these subsidies, the cost would be borne by other policyholders in the same state.²²⁰ In addition, the bill would require FEMA to finalize a monthly installment premium payment plan first required in the Homeowner Flood Insurance Affordability Act of 2014.²²¹ Other measures in the bill encourage community-based²²² and private flood insurance,²²³ as well as flood damage savings accounts.²²⁴

Nevertheless, House Bill 2874 also contemplates that premiums for coastal properties should, in general, reflect the real risks that those properties face. For example, it requires the FEMA Administrator to consider the differences between inland and coastal properties when calculating premium rates.²²⁵ The revised premiums for coastal properties would be implemented two years after the bill is enacted.²²⁶ In addition, House Bill 2874 would allow premiums to be calculated not just based on the flood maps, but also in light of “other risk assessment data and tools, including risk assessment models and scores from appropriate sources.”²²⁷ Communities participating in the NFIP would have to develop and implement community-specific plans to mitigate flood risks in areas repeatedly damaged by floods,²²⁸ and repetitive-loss properties would be subject to premium adjustments to reflect their flood risk, plus would have to mitigate those risks to keep flood insurance available.²²⁹ However, for other properties, House Bill 2874 would amend previous mitigation measure provisions to allow a reduction in the risk premium rates for people who employ such measures.²³⁰

218. *Id.* § 102.

219. *Id.* § 103.

220. *Id.*

221. *Id.* § 106.

222. *Id.* § 110.

223. H.R. 2874, §§ 201-205.

224. *Id.* §§ 206-207.

225. *Id.* § 105(b) & (c).

226. *Id.* § 105(c).

227. *Id.* § 301(a)(2).

228. *Id.* § 402(c).

229. H.R. 2874, § 504(b) & (g).

230. *Id.* § 113(b).

Finally, to increase transparency, House Bill 2874 would require that FEMA disclose its methodology for calculating risk-based premiums.²³¹ It would also require the FEMA Administrator to clearly communicate for all new and renewed policies the policyholders' "full flood risk determinations" and "the number and dollar value of claims for the property, over the life of the property."²³² Current owners may also request any historical flood and flood insurance information from FEMA, and FEMA must respond within 30 days.²³³ Most dramatically, House Bill 2874 requires state and local governments to impose, "by statute or regulation, a duty on any seller or lessor of improved real estate located [in a flood zone] to provide any purchaser or lessee of such property a property flood hazard disclosure"²³⁴ that meets a list of federal disclosure requirements.²³⁵ If states and local governments fail to comply, no new NFIP policies will be provided.²³⁶

Perhaps unsurprisingly, coastal interests object to the House's approach. Notably, "Republicans representing coastal districts urged their colleagues to vote against the bill, warning it would make flood insurance less affordable for their constituents and threaten the solvency of the NFIP."²³⁷ The bill sat with the Senate through the end of the last Congress, and it remains to be seen what will happen with the NFIP reauthorization as the new Congress takes up the task of governing. Nevertheless, House Bill 2874 modeled some good improvements to the NFIP, making the true risks of building on the coast more transparent.

V. CONCLUSION

The 2017-2018 NFIP reauthorization process provided Congress with a clear opportunity to update the NFIP for the realities that the United States' coasts face in the 21st century, especially the increased risk of more frequent and more severe coastal storms that flood coastal properties not previously considered at such risk. With sufficient political will, Congress could still reform the NFIP into an insurance program that both highlights these coastal realities and educates Americans about the increasing risks that climate change poses to the nation's coasts. Whether Congress will make good use of this opportunity, of course, remains an open question as the 2019 Congress returns to Washington.

231. *Id.* § 104.

232. *Id.* § 107(a)(1).

233. *Id.* § 108(b).

234. *Id.* § 109(a).

235. H.R. 2874, § 109(b).

236. *Id.* § 109(a).

237. Warmbrodt, *supra* note 174.

Several aspects of House Bill 2874 represent important steps in improving both the NFIP's fiscal health in light of coastal storms and its potential for incentivizing coastal adaptation. The bill would have allowed different premium rates for coastal properties compared to inland properties, allowing FEMA to more accurately charge coastal landowners for the flood risks they face while simultaneously signaling the basic fact that many coastal properties face greater risks than most inland properties. It would have broadened the tools that FEMA could use in calculating flood risk, which could include subsidence and erosion information and sea-level rise projections for particular coastal locations, helping to transition the NFIP from its traditional historical perspective to a recognition that the future will not be like the past. The bill would also potentially have provided FEMA with more effective means of dealing with areas and properties subject to repeated flooding and loss.

Perhaps most important, House Bill 2874 would have helped to ensure that both current and future coastal owners understand the flooding and storm risks that their properties face, potentially helping to disincentivize coastal development in the first place. John Nolon has argued that several communities within the United States are already experiencing the bursting of "climate change bubbles," wherein property values plummet as the adverse impacts of climate change become common knowledge.²³⁸ While his case studies provide a range of examples of how climate change impacts can affect property values, including drought and loss of water supply, most involve excess water and flooding, including along the coasts.²³⁹ A reauthorized NFIP that accelerated this process of public education about climate change risk and property values could similarly accelerate the pace at which buyers voluntarily choose not to purchase properties subject to significant risk of flooding, including coastal properties at risk from storms.²⁴⁰

Nevertheless, the NFIP reauthorization process has not yet fully embraced all the realities either of the 2017 hurricane season or of climate change, nor would House Bill 2874 have fully converted the NFIP into a

238. John R. Nolon, *Land Use and Climate Change Bubbles: Resilience, Retreat, and Due Diligence*, 39 WM. & MARY ENVTL. L. & POL'Y REV. 321, 322–25 (2015).

239. *Id.* at 337–50.

240. Notably, in June 2018, the Natural Resources Defense Council (NRDC) also advocated for greater disclosure and transparency regarding flood risks, arguing both that "[h]omeowners should have the right to know about their property's history of flood damages" and that "Congress should ensure greater accessibility and transparency of NFIP data to accurately inform the broader public (including researchers, city planners, and emergency responders) about flood risk." Joel Scata, *Hurricane Season Starts Without Flood Insurance Reforms*, NRDC: EXPERT BLOG (June 5, 2018), <https://www.nrdc.org/experts/joel-scata/hurricane-season-starts-without-flood-insurance-reforms>.

climate change adaptation law. First, both the 2017 and 2018 hurricane seasons have taught us that many more properties are at risk from coastal storms than the flood maps acknowledge. However, some of those properties really are, still, only at risk during a “freak” or unusual (“1000-year”) storm, while others are at risk in virtually every tropical storm season. The NFIP could better differentiate these relative risks and, possibly, expand the eligible pool of properties to include properties that could benefit from flood insurance truly designed to protect against the rare catastrophe—that is, “coastal” properties that, collectively over the long term, are likely to pay far more in NFIP premiums than they require in payments (as is generally the case with home casualty insurance).

Second, both the 2017 hurricane season and climate change in general teach us that “risk” is now a rapidly evolving concept. As a result, the NFIP reauthorization should require FEMA to update flood risks, particularly along the coast, on a much more regular basis—perhaps even continually. Moreover, these risk updates should take into account the latest and best projections from climate scientists and coastal erosion and subsidence experts to try to *anticipate* how flood risks along the coasts are changing, rather than just “hindcasting” based on past experience.

Finally, in light of climate change, the NFIP should become a program to encourage coastal retreat, particularly in areas already subject to repeated flooding and destruction. I have suggested elsewhere that Congress consider a “twice and out” policy that deems properties to be purchased by the federal government when NFIP payouts reach twice the fair market value of the property.²⁴¹ Edward Richards, in contrast, has advocated for insuring coastal properties according to a life insurance model.²⁴² Other approaches are possible,²⁴³ but to fully embrace its potential role in coastal climate change adaptation, the NFIP must not only *encourage* migration away from the riskiest coasts through information and financing but also *require* such

241. Robin Kundis Craig, *Coastal Adaptation, Government Subsidized Insurance, and Perverse Incentives to Stay*, CLIMATIC CHANGE 1, 9–10 (on-line 02 May 2018), <https://link.springer.com/article/10.1007/s10584-018-2203-5>; <https://doi.org/10.1007/s10584-018-2203-5>.

242. Richards, *supra* note 13, at 428, 444–60.

243. For example, the NRDC advocates for federal financial assistance to property owners who wish to move:

Congress, through the NFIP, should direct FEMA to provide more assistance to homeowners who would like to relocate, instead of repeatedly rebuilding after every flood. Implementing such a program would empower homeowners to escape the cycle of flooding and rebuilding, and would lessen the NFIP’s financial exposure by removing some of these continuously-flooded properties from its books.

Scata, *supra* note 240.

migration when the federal government has fully paid for a repeat-loss coastal property.