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You Get What You Pay For: The NFIP is Underwater and Climate Change Adaptation is Essential to Reach Dry Land

Alana Dietel

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YOU GET WHAT YOU PAY FOR: THE NFIP IS UNDERWATER AND CLIMATE CHANGE ADAPTATION IS ESSENTIAL TO REACH DRY LAND

Alana Dietel^A

INTRODUCTION	476
I. CLIMATE CHANGE REALITIES	478
A. <i>Effects of Climate Change</i>	479
B. <i>Hurdles to Climate Change Adaptation</i>	481
1. Moral Hazard	481
2. Cognitive Biases	482
II. EXISTING LEGAL FRAMEWORK	483
A. <i>Federal Initiatives</i>	483
1. National Flood Insurance Act and Program	483
2. Biggert-Waters Reform and Flood Insurance Affordability Act	488
B. <i>State and Local Initiatives</i>	490
1. Florida Coastal Management Statutes	490
2. Local Responses and Initiatives	491
i. <i>Miami-Dade County and City of Miami Beach</i>	492
ii. <i>Brevard County</i>	493
iii. <i>Pinellas County</i>	493
III. LOCATION-SENSITIVE PROVISIONS FOR NFIP ADAPTATION TO CLIMATE CHANGE	494
A. <i>General Provisions</i>	495
B. <i>Every City Is Not the Same: Location-Sensitive Provisions</i>	495
1. Miami-Dade County and City of Miami Beach: Taxes and Tourists	496
2. Brevard County: Bring Back Private Insurers	497
3. Pinellas County: Buyouts for Those Already in Trouble	498

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CONCLUSION	500
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INTRODUCTION

“Researchers and lawmakers warn: Florida is ‘Ground Zero’ for sea level rise.”¹ “This map shows how screwed Miami is if sea levels keep rising.”² “Bay area communities brace for flood insurance onslaught.”³ “Despite no floods, Brevard residents find themselves living in a flood zone.”⁴

Climate change is a reality, and Florida is uniquely situated to feel its effects sooner than other states.⁵ This is due to the prediction of a substantially rising sea level and the fact that a majority of the most populated and popular areas in Florida are located along or near the coasts.⁶ In particular, Florida’s residents have long been victims of extreme weather events, including hurricanes, tornados, storm surges, and the resultant flooding during and after these events.⁷ Federal, state, and local governments have long taken a reactive approach to preparing for and insuring against the possibility of extreme weather conditions, focusing too much on rebuilding the risk rather than prudently retreating from it. The harsh reality is that a complete and proportionate response to climate change is highly implausible due to the rigid nature of our society and the sense of entitlement many

1. Agence France-Presse, *Researchers and Lawmakers Warn: Florida is ‘Ground Zero’ for Sea Level Rise*, RAW STORY (Apr. 22, 2014), <http://www.rawstory.com/rs/2014/04/researchers-and-lawmakers-warn-florida-is-ground-zero-for-sea-level-rise>.

2. Gus Lubin, *This Map Shows How Screwed Miami is if Sea Levels Keep Rising*, BUS. INSIDER (Apr. 23, 2014), <http://www.businessinsider.com/map-of-miami-when-sea-levels-rise-2014-4>.

3. Josh Boatwright, *Bay Area Communities Brace for Flood Insurance Onslaught*, INSURANCENEWSNET (Feb. 4, 2015), <http://insurancenewsnet.com/oarticle/2015/02/04/bay-area-communities-brace-for-flood-insurance-onslaught-a-589926.html#.VODuUPnF91A>.

4. Christopher Heath, *9 Investigates: Despite No Floods, Brevard Residents Find Themselves Living in a Flood Zone*, WFTV (Jan. 6, 2015), <http://www.wftv.com/news/news/local/9-investigates-despite-no-floods-brevard-residents/njhJZ>.

5. See *Climate Change: How Do We Know?*, NASA GLOBAL CLIMATE CHANGE, <http://climate.nasa.gov/evidence> (last visited Aug. 26, 2015) [hereinafter NASA].

6. See NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL COASTAL POPULATION REPORT: POPULATION TRENDS FROM 1970 TO 2020 4 (2013), available at <http://stateofthecoast.noaa.gov/features/coastal-population-report.pdf> [hereinafter NOAA 2013].

7. See NOAA Office for Coastal Management, *Historical Hurricane Tracks*, DIGITALCOAST, <http://coast.noaa.gov/digitalcoast/historical-hurricane-tracks> (last visited Aug. 26, 2015). This site, as part of the NOAA Office of Coastal Management, offers an interactive mapping program to search and display hurricane data, view coastal population data, and access National Hurricane Center storm reports. The search parameters also allow for the inclusion of tropical storms, depressions, etc.

Americans feel with regard to coastal land ownership, use, and protection.

The National Oceanic and Atmospheric Administration (NOAA) defines a coastal area as one in which “at least fifteen percent of the county’s total land area is located within the Nation’s coastal watershed; or a portion of or the entire county accounts for at least fifteen percent of a coastal cataloging unit.”⁸ “A watershed is an area of land that water flows across as it moves toward a common body of water, such as a stream, river, lake, or coast.”⁹ In 2008, 15.9% of Florida’s population lived along the coastline, nearly doubling from the 8.1% calculated in 1960.¹⁰ As of 2010, over fifty percent of the U.S. population lived in coastal watershed counties.¹¹ To put that into perspective, nearly all of Florida could arguably be considered a coastal watershed.¹² In most Florida counties, all of which are on or near a coast, global warming has a multiplier effect on the likelihood of extreme floods from a factor of just 1.1 up to a factor of 7, depending on the region.¹³ This article evaluates the effects of flood risks along Florida’s coasts in light of a much-needed overhaul of the National Flood Insurance Program¹⁴ (NFIP) as a location-sensitive adaptive response to climate change.

By incorporating more location-sensitive options for purchasers of flood insurance, the NFIP is ideally positioned to transform from running at a deficit¹⁵ into the functional equivalent of an insurance program Americans expect. The NFIP could be a program that is adequately self-funded to pay out insurance claims for flooding and flood damage; consistently rewards proactive measures against flooding and risks of extreme weather events; raises awareness of the personal and financial risks and costs associated with coastal land ownership; and,

8. STEVEN G. WILSON & THOMAS R. FISCHETTI, U.S. CENSUS BUREAU, COASTLINE POPULATION TRENDS IN THE UNITED STATES: 1960 TO 2008 3 (2010), *available at* <https://www.census.gov/prod/2010pubs/p25-1139.pdf>.

9. *Watersheds*, SW FLA. WATER MGMT. DIST., <http://www.swfwmd.state.fl.us/education/watersheds> (last visited Aug. 26, 2015).

10. WILSON & FISCHETTI, *supra* note 8.

11. NOAA 2013, *supra* note 6, at 3.

12. WILSON & FISCHETTI, *supra* note 8, at 19.

13. BEN STRAUSS ET AL., CLIMATE CENTRAL, FLORIDA AND THE SURGING SEA: A VULNERABILITY ASSESSMENT WITH PROJECTIONS FOR SEA LEVEL RISE AND COASTAL FLOOD RISK 18 (Apr. 2014), *available at* <http://sealevel.climatecentral.org/uploads/ssrf/FL-Report.pdf>.

14. National Flood Insurance Act of 1968, 42 U.S.C.A. § 4001 (2014).

15. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, GAO-14-297R, FLOOD INSURANCE: OVERVIEW OF GAO’S PAST WORK ON THE NATIONAL FLOOD INSURANCE PROGRAM 9 (2014). As of 2013, the NFIP was in debt to the U.S. Treasury for approximately \$24 billion dollars.

provides location-specific options for coping with climate change adaptation and retreat.

Part I of this article examines the realities of climate change, including the global rise in temperatures, sea-level rise and coastal erosion, storm surge, and coastal storm ferocity. Part II reviews the current state of the most significant attempt at flood insurance by the Federal government, the NFIP. Part II also reviews Florida's statewide initiatives, as well as local initiatives of three distinct Florida counties, each of which is positioned to feel the effects of climate change in subtly different, yet potentially devastating, ways. Part III addresses the importance of recognizing the different effects that the necessary flood insurance reform will have on the three counties and how extending the NFIP in a workable manner is necessary to promote the longevity and safety of these regions. Part III also discusses how implementing a variety of options for adaptation is essential to address flood risk differences from region to region, emphasizing that insurance is not usually, and should not be treated as, a "one size fits all" product.

I. CLIMATE CHANGE REALITIES

The global temperature has increased most dramatically from 1983 to 2012, with an overall rise of .85°C from 1850 to 2014.¹⁶ Scientists overwhelmingly agree that the increase in global temperatures is due primarily to human contribution of greenhouse gases into the atmosphere.¹⁷ In its 2014 synthesis report, the Intergovernmental Panel on Climate Change (IPCC) posited that "it is likely that extreme sea levels . . . have increased since 1970, being mainly the result of mean sea-level rise."¹⁸ The IPCC also opined with high confidence that the long-term increases in economic losses from climate and weather-related disasters are due to increasing exposure of people and economic assets.¹⁹ If that were not enough, the IPCC predicted with very high confidence that coastal systems and low-lying areas will increasingly experience submergence, flooding, and erosion due to sea-level rise.²⁰

16. LISA ALEXANDER ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013 THE PHYSICAL SCIENCE BASIS: SUMMARY FOR POLICYMAKERS 3 (Thomas F. Stocker et al. eds., 2014), available at http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WGIAR5_SPM_brochure_en.pdf.

17. *Id.* at 11-12.

18. CLIMATE CHANGE 2014 SYNTHESIS REPORT 53 (2014), available at http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_All_Topics.pdf.

19. *Id.*

20. *Id.* at 67.

A. *Effects of Climate Change*

Since record keeping began, nine of the ten warmest years occurred during the 21st century.²¹ The year 2014 marked the 38th consecutive year since 1977 that the yearly global temperature was above average.²² For 650,000 years, the amount of carbon dioxide in the atmosphere did not exceed 300 parts per million.²³ As of 2014, the carbon dioxide levels reached an unprecedented 400 parts per million.²⁴ The IPCC assessment of climate change concluded with over ninety percent probability that the unparalleled global warming experienced—a departure from the past 650,000 years in Earth’s history—is due to human activities.²⁵ These facts scientifically and irrefutably confirm that the Earth is warming at an increased rate compared to previous periods in history and that the increase is due to humans.²⁶ Human influences by way of industrialization, deforestation, and burning of fossil fuels have contributed most significantly to the sharp increase in the emission of greenhouse gases since 1880.²⁷ IPCC scientists predict that the global surface temperature change for 2016-2035, relative to 1986-2005, will be in the range of 0.3°C to 0.7°C.²⁸ This increase in global temperature begs the question: will this increase disproportionately pose greater risks for already warm and heavily populated coastal regions?

In 2014, Florida surpassed New York to become the third most populous state in the United States, boasting a population of 19.9 million.²⁹ Also, Florida is home to some of the most heavily populated coastal areas.³⁰ As a result of global temperature rise on land and sea,

21. *Global Analysis – Annual 2014*, NOAA NAT’L CENTERS FOR ENVTL. INFO. (Jan. 2015), <http://www.ncdc.noaa.gov/sotc/global/2014/13>. Recorded history started in 1880.

22. *Id.*

23. NASA, *supra* note 5.

24. *Id.*

25. *Id.*

26. *Id.*; ALEXANDER ET AL., *supra* note 16.

27. UNION OF CONCERNED SCIENTISTS, CAUSES OF SEA LEVEL RISE: WHAT THE SCIENCE TELLS US 1 (Apr. 2013), *available at* http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/Causes-of-Sea-Level-Rise.pdf.

28. ALEXANDER ET AL., *supra* note 16, at 18.

29. *See* U.S. CENSUS BUREAU, FLORIDA PASSES NEW YORK TO BECOME THE NATION’S THIRD MOST POPULOUS STATE, CENSUS BUREAU REPORTS (Dec. 23, 2014), *available at* <http://www.census.gov/newsroom/press-releases/2014/cb14-232.html>.

30. NOAA 2013, *supra* note 6; WILSON & FISCHETTI, *supra* note 8.

many coastal regions are taking the brunt of the most immediate impacts of climate change by way of sea level rise and coastal erosion.³¹

As the Earth warms and forces the oceans to absorb excessive amounts of carbon, the top layers of the ocean warm, too, contributing to thermal expansion of the oceans and other bodies of salt water.³² Although thermal expansion contributed more significantly to rising sea levels immediately following the Industrial Revolution, that influence has generally remained constant in recent years.³³ While it may seem like the leveling off of the thermal expansion of the oceans and seas is encouraging, its positive effects are overshadowed by the fact that the shrinking of land ice has accelerated, thereby negating any delay in the rising of sea levels.³⁴

Climate Central, after conducting a comprehensive sea level rise analysis of fifty-five sites across the United States, found that Florida is home to about half of the exposed population and eight of the top ten at-risk cities.³⁵ Susceptibility to sea level rise is a strong indication of increased susceptibility to storm surges, tidal surge flooding, and extreme flood events caused by stronger and more vicious storms.³⁶

Conceding that the link between hurricane intensity, ocean temperatures, and human influence is complex, the consensus is still that there has been a substantial increase in the intensity and duration of Atlantic hurricanes since the 1980s.³⁷ Along with the possibility of extreme flooding from harsher storm activity, the National Climate Assessment predicts that the instances of heavy downpours will increase by twenty-seven percent for the Southeast region of the United States, including Florida.³⁸

31. See generally ERIKA SPANGER-SIEGFRIED ET AL., UNION OF CONCERNED SCIENTISTS, ENCREACHING TIDES: HOW SEA LEVEL RISE AND TIDAL FLOODING THREATEN U.S. EAST AND GULF COAST COMMUNITIES OVER THE NEXT 30 YEARS (Oct. 2014), available at <http://www.ucsusa.org/sites/default/files/attach/2014/10/encroaching-tides-full-report.pdf>.

32. UNION OF CONCERNED SCIENTISTS, *supra* note 27, at 1.

33. *Id.*

34. *Id.*

35. STRAUSS ET AL., *supra* note 13, at 2.

36. JOHN WALSH & DONALD WUEBBLES ET AL., NATIONAL CLIMATE ASSESSMENT, CHANGES IN HURRICANES (2014), available at <http://nca2014.globalchange.gov/report/our-changing-climate/changes-hurricanes>.

37. *Id.*

38. JOHN WALSH & DONALD WUEBBLES ET AL., NATIONAL CLIMATE ASSESSMENT, HEAVY DOWNPOURS INCREASING (2014), available at <http://nca2014.globalchange.gov/report/our-changing-climate/heavy-downpours-increasing>.

B. Hurdles to Climate Change Adaption

The Federal Emergency Management Agency (FEMA) plays a vital role in providing information regarding disaster planning and relief in the aftermath of a disaster.³⁹ Some unintended consequences of providing insurance against and financial relief from natural disasters have materialized since the inception of the NFIP.⁴⁰ Some, but certainly not all, of the unintended consequences of providing cheap flood insurance and not requiring mitigation has resulted in a moral hazard dilemma and cognitive biases,⁴¹ as discussed further in the following sections.

1. Moral Hazard

Moral hazard refers to the idea that those insured against a particular type of loss will take fewer precautions to avoid the risks associated with that type of loss.⁴² Moral hazard, as a term of art, traces its origins to the insurance industry.⁴³ Economists embraced this term to describe the “loss-increasing behavior that arises under insurance.”⁴⁴ Innate to the insurer-insured relationship is the shifting of responsibility, specifically financial.⁴⁵ The practical effect of this concept as it relates to flood insurance is that the availability of a subsidized policy encourages people to live in high-risk areas because of the perception that they are protected.⁴⁶ Although research and literature are available regarding the moral hazard dilemma in other fields, the information currently available regarding flood insurance, specifically, is limited.⁴⁷

39. See FED. EMERGENCY MGMT. AGENCY, <https://www.fema.gov> (last visited Aug. 26, 2015) [hereinafter FEMA].

40. Jennifer Wriggins, *Flood Money: The Challenge of U.S. Flood Insurance Reform in a Warming World*, 119 PENN ST. L. REV. 361, 384-95 (2014).

41. *Id.*

42. Tom Baker, *On the Genealogy of Moral Hazard*, 75 TEX. L. REV. 237, 252 (1996); Wriggins, *supra* note 40, at 388.

43. David Rowell & Luke B. Connelly, *A History of the Term “Moral Hazard”*, 79 J. RISK & INS. 1051, 1051 (2012).

44. *Id.*

45. Wriggins, *supra* note 40, at 388.

46. *Id.*

47. A majority of the research tends to focus on either medical issues or other forms of insurance that are not readily comparable to flood insurance.

2. Cognitive Biases

Other issues hindering many home and property owners' decisions to mitigate or purchase flood insurance are the cognitive biases that form around high cost-low probability events, such as tsunamis and meteor impacts.⁴⁸ These theories—normalcy bias, risk compensation, and gambler's fallacy—apply not only to individuals, but to the government as well.⁴⁹

Normalcy bias is the refusal to plan for, or react to, a disaster that has never before happened.⁵⁰ A good example of normalcy bias in action comes from a Brevard County news story, wherein a woman who was recently mapped into a flood zone thought she did not need insurance because she never experienced a flood in her area.⁵¹ Risk compensation is the tendency to take greater risks when the perceived safety increases.⁵² It has been suggested that analyzing visibility, effect, motivation, and control can help provide guidance for injury prevention measures.⁵³ The analysis of these variables may be used to assess the probability and extent to which risk-compensating behavior is demonstrated with regard to flooding mitigation and adaptation.⁵⁴ Gambler's fallacy is the tendency to think future probabilities are altered by past events or, more specifically, that the probability of an event is reduced if the same or similar event has recently occurred.⁵⁵ The research regarding these biases, like moral hazard, tends to focus on issues other than flood insurance. However, the theories do lend themselves to general application in flood-related disaster scenarios.

48. Adam F. Scales, *A Nation of Policyholders: Governmental and Market Failure in Flood Insurance*, 26 MISS. C. L. REV. 3, 9 (2006-2007).

49. *Id.* at 12.

50. See Haim Omer & Nahman Alon, *The Continuity Principle: A Unified Approach to Disaster and Trauma*, 22 AM. J. CMTY. PSYCHOL. 273, 273-74 (1994).

51. Heath, *supra* note 4.

52. See James Hedlund, *Risky Business: Safety Regulations, Risk Compensation, and Individual Behavior*, 6 INJURY PREVENTION 82, 84-86 (2000), available at <http://injuryprevention.bmj.com/content/6/2/82.full.pdf>. An example would be the idea that having a seat belt law will influence some drivers to drive with less caution.

53. *Id.* at 88.

54. *Id.*

55. Dek Terrell, *A Test of the Gambler's Fallacy: Evidence from Pari-Mutuel Games*, 8 J. RISK & UNCERTAINTY 309, 309-10 (1994).

II. EXISTING FLOOD INSURANCE FRAMEWORK

A. Federal Initiatives

The Federal government introduced its national flood insurance initiative in 1968⁵⁶ and the government has attempted to make it a workable and solvent program ever since. The most notable efforts began in 1994, with the National Flood Insurance Reform Act.⁵⁷ This act was followed by the Biggert-Waters Act in 2012,⁵⁸ and finally resulted in the Affordability Act of 2014.⁵⁹ The sections that follow will detail each significant step in the evolution of the Federal government's flood insurance program.

1. National Flood Insurance Act and Program

In 1968, the federal government saw a need for federal intervention in the flood insurance industry.⁶⁰ Its efforts resulted in the enactment of the National Flood Insurance Act of 1968, and implementation of the National Flood Insurance Program (NFIP).⁶¹ It became apparent to Congress that the private insurance industry was not ready or able to provide competitive premium pricing that reflected the actual level of risk they were willing to underwrite.⁶² Rather than leaving homes and property owners unprotected, the NFIP aimed to create a uniform national program to address the potential losses and damages caused by flooding.⁶³

From the outset, the NFIP objectives were simple: to create a self-sustaining federal flood insurance program funded by collected premiums for land located in flood hazard areas as determined by FEMA and in compliance with the program's proposed system of national management of flood plains.⁶⁴ Within the NFIP, the federal government plays the role of financier, while private insurance compa-

56. National Flood Insurance Act of 1968, 42 U.S.C. § 4001 (2014).

57. National Flood Insurance Reform Act of 1994, Pub. L. 103-325, 108 Stat. 2255.

58. Biggert-Waters Flood Insurance Reform Act of 2012, Pub. L. No. 112-141, 126 Stat. 916-88.

59. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020.

60. 42 U.S.C. § 4001 (2014) (outlining congressional findings).

61. *Id.*

62. *Id.*

63. *Id.*

64. *Id.*

nies administer the program.⁶⁵ Ancillary to the goal of pooling risk among a national base, the program was intended to encourage mitigation behaviors for those communities that participated.⁶⁶

The NFIP is intended to work in a relatively simple manner. FEMA funds the program through collection of policy premiums and receives appropriations for some flood mapping and mitigation activities.⁶⁷ Due to the unpredictability of natural disasters and the high correlation among filing of claims after these disasters, it has become necessary in some of the more severe instances for FEMA to borrow from the U.S. Treasury if premiums collected do not cover claim payouts, which has happened after every major hurricane or storm of the 21st century.⁶⁸ Congress sets the limits on FEMA's borrowing authority and, as of December 31, 2013, FEMA's borrowing authority was \$30.4 billion.⁶⁹ Premiums collected also cover the program's operation expenses, outreach, and research, in addition to paying out claims.⁷⁰ While \$30.4 billion sounds like a large amount of money, the NFIP is currently in debt to the U.S. Treasury for about \$24 billion.⁷¹

The NFIP agenda consists of three components: risk identification and assessment, risk mitigation, and insurance.⁷² In risk identification and assessment, the NFIP tasked FEMA with identifying and mapping all flood plain areas, including special hazard areas, and establishing and updating flood-risk zone data (flood insurance rate maps or FIRMs) to make estimates with respect to rates of probable flood-caused losses.⁷³ Secondly, the NFIP encouraged state and local measures that: constrict development of land exposed to flood damage; guide development of proposed construction away from locations threatened by flood hazards; assist in reducing damage caused by floods; and otherwise improve the long-range land management and use of flood-prone areas.⁷⁴ Lastly, the NFIP program provides flood insurance to the extent that the community has been mapped by FEMA,

65. *Id.*

66. Rachel Lisotta, *In over Our Heads: The Inefficiencies of the National Flood Insurance Program and the Institution of Federal Tax Incentives*, 10 LOY. MAR. L. J. 511, 514 (2012).

67. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, *supra* note 15.

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

72. Ernest B. Abbott, *Eye of the Storm: Hurricane Sandy Response and Rebuilding Strategies Through the Lens of Environmental Justice*, 26 FORDHAM ENVTL. L. REV. 10, 29-30 (2014).

73. 42 U.S.C. § 4101 (2014).

74. § 4102.

risk assessed, and the local government has instituted the required ordinances under the program's guidelines for flood plain management.⁷⁵

The National Flood Insurance Act defines a flood as “hav[ing] such meaning as may be prescribed in regulations of the Administrator, and may include inundation from rising waters or from the overflow of streams, rivers, or other bodies of water, or from tidal surges, abnormally high tidal water, tidal waves, tsunamis, hurricanes, or other severe storms or deluge.”⁷⁶ Providing insurance and creating incentives to mitigate flood risks and damage seems reasonable given that ninety percent of all natural disasters in the United States involve flooding.⁷⁷

As of September 30, 2013, there were approximately 22,000 communities participating in the NFIP, which equates to more than 5.5 million policies in force.⁷⁸ Although it may seem counterintuitive, not all individuals in flood prone areas are required to purchase flood insurance.⁷⁹ Individual participation in the NFIP is predicated on whether the community in which the individual's property is situated has adopted and enforces the NFIP floodplain management regulations.⁸⁰ If so, participation may still be optional if the property is not financed through regulated lending institutions,⁸¹ government-sponsored enterprises for housing, or federal agency lenders.⁸² To the extent that flood insurance is actually available, it may not be required in all instances. For example, flood insurance is not required if the property is outside of the high-risk area.⁸³

75. §§ 4011, 4012(c).

76. § 4121.

77. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, *supra* note 15, at 3.

78. *Id.* at 24.

79. *About the National Flood Insurance Program: When Insurance is Required*, FLOODSMART.GOV, https://www.floodsmart.gov/floodsmart/pages/about/when_insurance_is_required.jsp (last updated June 17, 2015).

80. *Id.*

81. Includes “any bank, savings and loan association, credit union, farm credit bank, Federal land bank association, production credit association, or similar institution subject to the supervision on a Federal entity for lending regulation.” 42 U.S.C. § 4003(a)(10) (2015).

82. Defining these agencies as “Federal agenc[ies] that make[] direct loans secured by improved real estate or a mobile home.” 42 U.S.C. § 4003(a)(7) (2015).

83. “In high-risk areas, there is at least a 1 in 4 chance of flooding during a 30-year mortgage. All home and business owners in these areas with mortgages from federally regulated or insured lenders are required to buy flood insurance.” *Defining Flood Risks*, FLOODSMART.GOV, https://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/defining_flood_risks.jsp (last updated June 17, 2015).

To encourage participation in the national program, the government implemented the National Flood Disaster Act of 1973.⁸⁴ The 1973 Act authorized FEMA to grant premium subsidies to create incentives for communities and property owners to accept the program's requirements.⁸⁵ By 1980, nearly all communities with flood hazard areas agreed to join the program, and the Act added mandatory purchase requirements for properties in certain flood-prone areas.⁸⁶ The 1973 Act was followed by the implementation of FEMA's "Write Your Own" (WYO) program in 1983. In this program, private insurers were authorized to market NFIP flood policies; however, the federal government remained the guarantor for the WYO insurers.⁸⁷

In a continuing effort to make purchasing a flood insurance policy mandatory, the federal government enacted the National Flood Insurance Reform Act of 1994.⁸⁸ Under the 1994 Act, the government expanded the mandatory flood insurance purchase requirement and prohibited further flood disaster assistance for properties that did not maintain flood insurance.⁸⁹ More specifically, the 1994 Act required three new categories of people to purchase flood insurance: those who received their loans from federally regulated institutions or whose loans were secured by improved real estate or a manufactured home; those whose loans have been purchased by the Federal National Mortgage Association or Federal Home Loan Mortgage Corporation; and property owners in participating special flood hazard area (SFHA) communities who received federal financial assistance for property acquisition and construction purposes.⁹⁰

Even though the government was attempting to implement a flood insurance purchasing requirement, it also wanted to help owners afford flood insurance. The two most prominent ways in which the NFIP furthered these two objectives was by granting heavily subsidized premiums and allowing for grandfathered rates.⁹¹ The subsidized policies are predominantly for properties built before Flood Insurance Rate Maps (FIRMs) became available and are referred to as

84. Flood Disaster Protection Act of 1973, Pub. L. No. 93-234, HR 8449, 87 Stat. 975.

85. Quynh T. Pham, *The Future of the National Flood Insurance Program in the Aftermath of Hurricane Katrina*, 12 CONN. INS. L. J. 629, 632 (2006).

86. *Id.*

87. *Id.*

88. National Flood Insurance Reform Act of 1994, Pub. L. 103-325, 108 Stat. 2255.

89. THOMAS L. HAYES & SHAMA S. SABADE, NATIONAL FLOOD INSURANCE PROGRAM, ACTUARIAL RATE REVIEW 2 (Nov. 30, 2004), available at http://www.fema.gov/media-library-data/20130726-1554-20490-7222/rate_rev04.pdf.

90. Pham, *supra* note 85, at 642.

91. Abbott, *supra* note 72, at 30-33.

“pre-FIRM” policies.⁹² The assumption was that subsidized policies would be eliminated over time due to attrition by way of code compliance, triggered by substantial damage or substantial improvements.⁹³ Other subsidized policies are those for properties behind certain unfinished or decertified levees, certain post-FIRM properties, and emergency program properties.⁹⁴ Conversely, grandfathered premiums are generally those premiums that reflect the FIRM risk as calculated when the policy was taken out, rather than a premium based on the present day, and actual, FIRM risk.⁹⁵

In its original iteration, it is easy to see how the National Flood Insurance Act and its program were well intended—but in hindsight, it is evident that the program has fallen woefully short of its original objectives. The state of the NFIP as of the 1994 Act was as follows: nearly all communities that were eligible to participate in the NFIP participated; flood insurance has now become a requirement for all properties financed through any federally insured or regulated lending institution; and all new construction and substantial improvement to existing structures (improvement by more than fifty percent of the property’s fair market value) are to be assessed premiums that reflect actuarially sound risk rates.⁹⁶

Of the 900 weather-related loss events that occurred worldwide in 2014, 20% of the events happened in North America, including Central America and the Caribbean.⁹⁷ This means that there is an 18% chance that, in the event of a natural disaster in the United States, victims will experience flood related loss or damage. To put this into perspective, some states, such as Florida, require drivers to carry car insurance.⁹⁸ In 2014, 1.5% of car crashes in Florida resulted in injury.⁹⁹ This means that the average citizen has a 1.5% chance of getting injured in a car accident and an 18% chance of losing his/her home to a flood. However, insurance is only required in one of these scenarios.

92. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, *supra* note 15, at 5.

93. Abbott, *supra* note 72, at 30.

94. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, *supra* note 15, at 5 n.10.

95. Abbott, *supra* note 72, at 30.

96. *See supra* pp. 10-14.

97. *See* MUNICH REINSURANCE, NATCAT SERVICES, *available at* http://www.munichre.com/site/corporate/get/documents_E-890092315/mr/assetpool.shared/Documents/5_Touch/Natural%20Hazards/NatCatService/Annual%20Statistics/2014/mr-natcatservice-natural-disaster-2014-Loss-events-worldwide-continents.pdf.

98. *See Resource Center*, FLA. HIGHWAY SAFETY & MOTOR VEHICLES, <http://www.flhsmv.gov> (last visited Aug. 26, 2015).

99. *Id.*

A community that incorporates a mandate for the best available mitigation and adaptation strategies in its community development plan or flood plain management scheme is eligible to participate in the Community Rating System (CRS).¹⁰⁰ This program rates each county or city according to its efforts with regard to alleviating the risk of flooding and flood damage.¹⁰¹ Each county receives a ranking from nine to one, with one being the best rating.¹⁰² The closer the rating is to one, the higher percentage discount the community receives on its NFIP flood insurance rates.¹⁰³ More than 67% of all flood insurance policies are written in CRS communities, even though CRS communities only make up about 5% of the 22,000 communities who participate in the NFIP.¹⁰⁴

2. Biggert-Waters Reform and Flood Insurance Affordability Act

In an effort to relieve taxpayers of the burden of paying for disaster relief that should have otherwise been covered by the NFIP, Congress rolled out the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12).¹⁰⁵ BW-12 was what some now consider an aggressive departure from the historical practices of the NFIP in an effort to increase the program's solvency and adequately incentivize preparation for and insuring against all flood-risk realities.

Under the BW-12, pre-FIRM subsidized premiums would increase at a rate of 25% each year until reaching the full-risk rates for severe repetitive loss properties—properties with cumulative paid flood losses exceeding fair market value, non-primary residences, and businesses/non-residential buildings.¹⁰⁶ Policies would also be written or renewed at full-risk rates for property purchased on or after July 6,

100. FEMA, *supra* note 39; *Community Rating System*, FLOODSMART, https://www.floodsmart.gov/floodsmart/pages/crs/community_rating_system.jsp (last visited Aug. 26, 2015).

101. FEMA, *supra* note 39.

102. *National Flood Insurance Program Community Rating System*, FEMA, <https://www.fema.gov/national-flood-insurance-program-community-rating-system> (last visited Aug. 26, 2015).

103. *Id.*

104. *Id.*

105. Biggert-Waters Flood Insurance Reform Act of 2012, Pub. L. No. 112-141, 126 Stat. 916-88.

106. FEMA, *supra* note 39. FEMA defines a severe repetitive loss property as “residential property that is covered under an NFIP flood insurance policy” and that has at least four NFIP claim payments with a cumulative amount exceeding \$20,000.00; or property “for which at least two separate claim payments” with a cumulative amount exceeding the market value of the building have been made. For both such situations, “at least two of the referenced claims must have occurred within any ten-year period, and must be greater than ten days apart.” *Severe Repetitive Loss Property Locations in FEMA Regions IV and VI*,

2012; new policies effective on or after July 6, 2012; and lapsed policies reinstated on or after October 4, 2012.¹⁰⁷ With mounting pressure on multiple fronts, Congress decided to save face rather than protect its constituency.¹⁰⁸ Thus, the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA-14) was proposed by Congressmen Menendez and Grimm and passed.¹⁰⁹

If BW-12 was Congress's Goliath attempt to make the NFIP functional, the HFIAA-14 was its David-esque response that effectively dismantled most of BW-12's best and most aggressive tactics.¹¹⁰ A few of the most significant provisions of the HFIAA-14 are the repeal of certain rate increases,¹¹¹ restoration of grandfathered rates,¹¹² introduction of surcharges for all policies,¹¹³ and the gradual integrated rate increases for newly mapped areas with special flood hazards.¹¹⁴

In its "Repeal of Certain Rate Increases," the HFIAA-14 repealed any immediate rate increases to actuarial rates and supplanted the BW-12 provision by requiring gradual rate increases by no less than five percent annually until the premium reaches its full-risk rate.¹¹⁵ With regard to premium increases, "the chargeable risk premium rate for flood insurance under [HFIAA-14] for any property may not be increased by more than eighteen percent each year."¹¹⁶ There are a few exceptions that will retain the BW-12 rate increases: older business properties insured with subsidized rates, older non-primary residences insured with subsidized rates, severe repetitive loss properties insured with subsidized rates, and buildings that have been

FEMA (Feb. 28, 2009), http://www.fema.gov/media-library-data/20130726-1709-25045-4851/2_severerepetetiveloss.pdf.

107. *Id.*

108. Letter from Gary Thomas, 2013 President, National Association of Realtors, to W. Craig Fugate, Administrator, Federal Emergency Management Agency (Oct. 10, 2013), available at <http://www.ksefocus.com/billdatabase/clientfiles/172/3/1889.pdf>.

109. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, 128 Stat. 1020.

110. Abbott, *supra* note 72, at 51. HFIAA is one third the length of BW-12.

111. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, § 3(a)(1)(A), 128 Stat. 1021.

112. *Id.*

113. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, § 8, 128 Stat. 1023-24.

114. § 6, 128 Stat. 1023.

115. FEMA, HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OVERVIEW 2 (2014), available at http://www.fema.gov/media-library-data/1396551935597-4048b68f6d695a6eb6e6e7118d3ce464/HFIAA_Overview_FINAL_03282014.pdf.

116. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, § 5(5), 128 Stat. 1022.

substantially damaged or improvements built before the local adoption of a FIRM.¹¹⁷

Where the BW-12 included catastrophic loss years in calculating the “average historical loss year,” the HFIAA-14 no longer requires the inclusion of catastrophic loss years when determining risk levels—in effect restoring grandfathered rates.¹¹⁸ In an effort to counteract the loss of potential revenue generated by the BW-12 immediate premium increases, the HFIAA-14 implemented a surcharge on all flood insurance policies of \$250.00 for non-residential properties and residential properties that are not the primary residence of an individual, and a \$25.00 surcharge for all other policies.¹¹⁹

HFIAA clarifies the rate at which newly mapped special flood hazard areas will be assessed and the timeline during which the rate should reach its actuarial risk level.¹²⁰ An owner who purchased his or her property after the enactment of HFIAA and whose property was recently designated a special flood hazard area would pay the preferred risk policy premium¹²¹ for the first policy year.¹²² Upon renewal of such a policy, the premium would be calculated in accordance with actuarial rates and any flood mitigation activities the owner has undertaken.¹²³

B. State and Local Initiatives

1. Florida Coastal Management Statutes

Florida has set forth by statute its own efforts to encourage vulnerable jurisdictions to develop comprehensive strategies to mitigate the risks associated with natural disasters and the extensive flood damage that may result.¹²⁴ The Florida coastal management legisla-

117. FEMA, *supra* note 39.

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

119. § 8, 128 Stat. 1023-24.

120. § 6, 128 Stat. 1023.

121. A preferred risk policy offers “multiple coverage combinations for both buildings and contents [] that are located in moderate-to-low risk areas . . . [These policies] are available for residential or non-residential buildings also located in these zones, and that meet eligibility requirements based on the building’s entire flood loss history.” *Frequently Asked Questions*, FLOODSMART.GOV, <https://www.floodsmart.gov/floodsmart/pages/faqs/what-is-the-preferred-risk-policy.jsp> (last visited Aug. 26, 2015).

122. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, § 6, 128 Stat. 1023.

123. 42 U.S.C. § 4014(a)(1) (2014).

124. FLA. STAT. ANN. § 163.3178 (2015).

tion mirrors the federal Coastal Zone Management Act.¹²⁵ In large part, development and implementation of coastal management is left to each municipality.¹²⁶ In one of its first sections, the state statute lays out the required aspects of these comprehensive plans, and it also provides recommendations for optional additions to the plans.¹²⁷ What is slightly more disturbing is that, by and large, the prudent measures to protect the coasts and its population from flooding appear to be optional:

At the *option* of the local government, develop an adaptation action area designation for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area *may* consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise. Criteria for the adaptation action area *may* include, but need not be limited to, areas for which the land elevations are below, at, or near mean high water, which have a hydrologic connection to coastal waters, or which are designated as evacuation zones for storm surge.¹²⁸

Florida's coastal management statute covers the basics and allows each municipality to adopt local ordinances and codes that suit each municipality's unique topography, economy, and population.

2. Local Responses and Initiatives

Most coastal counties in Florida have adopted coastal floodplain management ordinances.¹²⁹ Generally, each community will develop a comprehensive code but may focus more on hazards frequently experienced in their location.¹³⁰

125. 16 U.S.C. §§ 1451-65 (2014). Although federal coastal management is relevant, it is beyond the scope of this paper. For a more in-depth review of federal coastal management and how it relates to and sometimes diverges from state and local coastal management, see Chad J. McGuire, *Climate Change and the Coastal Zone Management Act: The Role of Federalism in Adaptation Strategies*, in CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 419-37 (Randall S. Abate ed., 2015).

126. FLA. STAT. ANN. § 163.3178 (2015).

127. § 163.3177.

128. § 163.3177(6)(g)(10) (emphasis added).

129. See generally Municode, <https://www.municode.com/> (last visited Aug. 26, 2015).

130. The purpose of this section is to outline, by way of a three county example, the general structure and objectives of most municipal flood ordinances in Florida. Specific detail and nuanced differences between and among the counties is beyond the scope of this paper.

i. Miami-Dade County and City of Miami Beach

Greater Miami and the Beaches received 14.2 million visitors in 2013, making it one of the most popular destinations in the world.¹³¹ While visiting Miami, 43.6% of visitors who used lodging stayed in Miami Beach.¹³² Another staggering, although not entirely unexpected, statistic is that 68.2% of overnight visitors to Miami visited the Beaches.¹³³ The total population of Miami-Dade County was estimated at a little over 2.6 million in 2013.¹³⁴ Of this total for the county, the estimated 2013 population for Miami Beach was only 91,026.¹³⁵ This section includes both the City of Miami Beach and Miami-Dade County, because Miami Beach is at increased risk of flooding, and Miami-Dade is heavily reliant on Miami Beach.

Chapter 54 of the City of Miami Beach's municipal code is dedicated to floodplain management.¹³⁶ The code sets out in its statement of purpose its intention to promote public safety, health, and general welfare, and to minimize public and private losses from flood conditions by provisions designed to restrict or prohibit uses that are dangerous because of water or erosion hazards; require uses vulnerable to floods be protected against flood damage throughout their intended lifespan; control alteration of natural floodplains and natural protective barriers involved in accommodating floodwaters; control development that may increase erosion or flood damage; and prevent or regulate construction of flood barriers that unnaturally divert floodwaters or increase flood hazards to other lands.¹³⁷

Miami-Dade County institutes similar objectives with regard to floodplain management and building codes in coastal flood hazard areas.¹³⁸ Among the provisions of this chapter is a requirement that new construction or substantial improvement construction in coastal flood hazard areas use construction materials and utility equipment that are resistant to flood damage and construction practices that minimize

131. *Research and Statistics*, GREATER MIAMI CONVENTION & VISITORS BUREAU, <http://www.miamiandbeaches.com/sitecore/content/partners/tools-and-resources/research-and-statistics> (last visited Aug. 26, 2015).

132. GREATER MIAMI CONVENTION & VISITORS BUREAU, 2013 VISITOR INDUSTRY OVERVIEW 4, available at <http://www.miamiandbeaches.com/~media/files/gmcbv/partners/visitor-industry-overview-2013>.

133. *Research and Statistics*, *supra* note 131.

134. *State and County Quick Facts*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/12000.html> (last visited Aug. 26, 2015).

135. *Id.*

136. MIAMI BEACH, FLA., ORDINANCES ch. 54, art. II, § 54 (2009).

137. *Id.* at § 54.33.

138. MIAMI-DADE, FLA., CODE OF ORDINANCES, Part III, ch. 11C, § 11C (1974).

flood damage.¹³⁹ The County Manager or his designee administers and enforces the provisions of the floodplain management and building codes.¹⁴⁰

ii. Brevard County

Brevard County sits along Florida's Atlantic coast and is home to popular tourist destinations, the Space Coast, and residential areas.¹⁴¹ Some of the better-known cities in Brevard County include Cape Canaveral, Cocoa and Cocoa Beach, Indian Harbour Beach, Melbourne, Palm Bay, Rockledge, Satellite Beach, Titusville, and West Melbourne.¹⁴² The U.S. Census Bureau puts the county's population around 550,823, as of the 2013 estimate.¹⁴³ The homeownership rate from 2009 to 2013 was approximately 73.5%, making residential property owners a significant contributor to the population base.¹⁴⁴

Brevard puts forth its flood regulations in its Flood Damage Protection ordinances.¹⁴⁵ Similar to Miami Beach and Miami-Dade County, the purpose of the Brevard ordinances is to promote health, safety, and general welfare and to "minimize public and private losses due to flood conditions."¹⁴⁶ The provisions are designed to prevent occurrences such as water erosion, flood damage, and acts such as dredging, which may increase erosion or flood damage."¹⁴⁷

iii. Pinellas County

Although few people may know the county by name, they are probably familiar with the cities in Pinellas County, including Clearwater Beach, St. Petersburg Beach, Treasure Island, and countless more beaches and beach communities throughout.¹⁴⁸ An overhead view of this area shows that it is a peninsula, just like Florida, making it a peninsula within a peninsula.¹⁴⁹ The 2013 population estimate for Pi-

139. *Id.* at § 11C-3(b).

140. *Id.* at § 11C-8.

141. BREVARD COUNTY, FLORIDA, <http://www.brevardcounty.us/Home> (last visited Aug. 26, 2015).

142. *Id.*

143. *State and County Quick Facts*, *supra* note 134.

144. *Id.*

145. BREVARD, FLA., CODE OF ORDINANCES, Vol. II, ch. 62, art. XI, § 62.4001 (2014).

146. *Id.* at § 62-4003.

147. *Id.* at § 62-4003(1)-(3).

148. PINELLAS COUNTY, FLORIDA, <http://www.pinellascounty.org/> (last visited Aug. 26, 2015).

149. VISIT FLORIDA, <http://www.visitflorida.com/en-us.html> (last visited Aug. 26, 2015).

nellas was around 929,048.¹⁵⁰ Of this total, the homeownership rate from 2009 through 2013 was sixty-seven percent, making it more residential than commercial.¹⁵¹ As of the 2010 census, Pinellas's population density was 3,300 people per square mile, making it the most densely populated county in Florida.¹⁵²

As with most Florida coastal counties, the purpose and objectives with regard to community management of floodplains and flood areas are generally homogenous.¹⁵³ Pinellas varies in no significant way from the purposes set forth by Miami-Dade County, the city of Miami Beach, or Brevard County.¹⁵⁴

Because a national program can do little to address location-specific issues (population density, residential versus commercial, wealthy versus impoverished, vulnerability to storm surge versus downpour flooding, etc.), it only makes sense that the NFIP has fallen woefully short in providing cogent, long-term adaptation strategies that best fit each unique coastal community.

III. LOCATION-SENSITIVE PROVISIONS FOR NFIP ADAPTATION TO CLIMATE CHANGE

Keeping in mind that the NFIP has a community rating system that allows for greater discounts for flood preparedness and mitigation, it would stand to reason that communities in a state like Florida with coasts on three sides would be ranked high on the list to secure the best discount for its residents.¹⁵⁵ Sadly, that is not the case. Not one community in Florida that is eligible to participate in the CRS is rated better than a five.¹⁵⁶ While each of the three counties and one city discussed have implemented floodplain management ordinances in compliance with the NFIP, they are still not doing enough to enforce the rules already on the books and motivate their residents to take more rigorous proactive measures. Allowing subsidies and grandfathered rates is not the same as providing a discount for imple-

150. *State and County Quick Facts*, *supra* note 134.

151. *Id.*

152. *Guide to 2010 Census State and Local Geography - Florida*, U.S. CENSUS BUREAU, http://www.census.gov/geo/reference/guidestloc/st12_fl.html (last visited Aug. 26, 2015).

153. *See generally* MUNICODE, *supra* note 129.

154. PINELLAS, FLA., CODE OF ORDINANCES, Part III, ch. 158, § 158 (1995).

155. FEMA, *supra* note 39; *National Flood Insurance Program Community Rating System*, *supra* note 102.

156. *National Flood Insurance Program Community Rating System*, *supra* note 102. One is the best rating, ten means the locale does not participate, and nine is the worst rating. *Id.*

menting proper mitigation techniques. With subsidies and grandfathered rates, the NFIP is basically rewarding the most at-risk properties, which is entirely counterintuitive to its purpose. The NFIP rate estimate policies, as reformed by the HFIAA, have become less financially burdensome than the provisions of the BW-12 by allowing the end goals of the BW-12 to be implemented more slowly over time, rather than immediate increases after a triggering event.¹⁵⁷

It has become apparent that allowing more policyholders to pay less is not helping the NFIP repay its debt to the treasury.¹⁵⁸ Intuitively, policyholders would be unlikely to voluntarily participate if they would end up paying more in premiums for the same policies. It could be argued that, at least in part, the financial solvency of the NFIP was predicated on the notion that the program could make up in volume what it lacked in actuarially sound policies. Without requiring communities to participate, it is difficult to see how this particular end was justified by its means.

A. *General Provisions*

Consistent with the HFIAA-14, the eventual elimination of subsidies and grandfathered rates is essential to extending the life of the NFIP. The policy surcharges imposed also promote that objective. Consistently calculating in catastrophic loss years in estimating the FIRM risks will help bring the policy rates steadily back to actuarial soundness. These policy changes and premium adjustments happen across the board but still do not provide struggling property owners with enough relief when it comes to insuring or reinsuring property in flood prone areas.

B. *Every City is Not the Same: Location-Sensitive Provisions*

Just like car insurance providers take into account multiple factors when determining the rates they provide to individual drivers, so should flood insurance providers—and not just the FIRM information provided by FEMA. It is equally as important to take into account the local population base and economies of each city and county participating in the NFIP.

157. See Biggert-Waters Flood Insurance Reform Act of 2012, Pub. L. No. 112-141, 126 Stat. 916-88.

158. U.S. GOVERNMENT ACCOUNTABILITY OFFICE, *supra* note 15.

1. Miami-Dade County and City of Miami Beach:
Taxes and Tourists

Thankfully, Miami-Dade County and the city of Miami Beach do participate in the CRS, but as of October 2014, Miami-Dade County held a rating of five and the City of Miami Beach held a rating of six.¹⁵⁹ With a rating of five, Miami-Dade County is able to offer a 25% discount on policies in special flood hazard areas and a 10% discount for non-special flood hazard areas. Miami Beach, at a six, can offer a 20% discount on special flood hazard policies and the same 10% on non-special flood hazard policies.¹⁶⁰

Arguably, the most immediate and irreversible threats to this region of Florida are sea-level rise, higher levels of tidal flooding, and storm surge reaching farther inland from more intense storm activity and hurricanes. Most of the Miami Beach area is developed, with condominium high rises, resorts, and tourist destinations, as tourism is its number one industry.¹⁶¹ Most of Miami Beach's economy is tied to the high rates of tourism, but at the projected rates of sea-level rise, it is estimated that by 2030, the frequency of tidal flooding will increase from six to forty-five events per year.¹⁶²

Miami Beach and Miami-Dade County need to tighten their proverbial ships to allow the residents in each location to qualify for the most generous discounts available by the NFIP through the CRS. Considering that these regions are most at risk for extreme flooding, it is baffling that the two locations have not done everything in their power to mandate and enforce coastal floodplain management provisions to achieve the highest rating the NFIP CRS has to offer, thereby adding to the protection of each to the highest extent possible and making insurance more affordable to the residents. The NFIP can help this particular region by focusing on policy adjustments that address the manner in which FEMA incorporates sea level rise and tidal flooding into its risk mapping and aggressive marketing to inform the community of the financial realities of their investments.

Since a majority of Miami Beach is commercial property, businesses are likely to be more resilient than residential property owners to flood insurance rate increases. Also, due to Miami's widespread reliance on tourism, business owners are eager to keep new and returning visitors coming to its beaches. Implementing a tax credit scheme, re-

159. *National Flood Insurance Program Community Rating System*, *supra* note 102.

160. *Id.*

161. SPANGER-SIEGFRIED ET AL., *supra* note 31.

162. *Id.*

warding mitigation efforts, and penalizing lapses in coverage or below risk policy premiums should motivate business owners to protect their investments and keep tourists (rather than the ocean) flooding through their doors. With regard to residential property owners, multi-million dollar homes predominate some of the most at-risk residential neighborhoods in Miami Beach. These owners have likely already taken property mitigation precautions or are financially stable enough to survive a complete loss. By implementing a tax credit system in a county and city dominated by tourist-industry businesses, commercial properties, and wealthy residential property owners, the NFIP could shift the financial burden to the tourists and more palpably encourage mitigation and adaptation strategies.

2. Brevard County: Bring Back Private Insurers

Brevard County boasts on its website that it participates in the NFIP's CRS¹⁶³ but, like Miami-Dade County, its rating is lower than it should be.¹⁶⁴ At a rating of seven, Brevard secures a discount of 15% for policies taken out in special flood hazard areas and a 5% discount for non-special flood hazard areas.¹⁶⁵ While some discount is better than none, these reductions are effectively removed when you take into account the gradual increases mandated by the HFIAA-14.¹⁶⁶

Although Brevard has taken proactive measures in updating its FIRMs and reassessing insurance requirements and premiums, the backlash was almost immediate. A resident of Rockledge, in Brevard, was shocked to find that, in 2014, her home was remapped into a flood zone.¹⁶⁷ FEMA responded by providing the resident with two options: pay a minimum of \$1,000 to get her own survey and resubmit the data to FEMA, or continue spending hundreds of dollars a month on flood insurance.¹⁶⁸ Having lived in her neighborhood for over ten years and never having experienced a flood or even pooling water following strong storms, she is concerned that the extra expense will force her out of her home.¹⁶⁹

Perhaps the best solution for Rockledge, Brevard County, and other similarly situated cities and counties in combating the rising cost

163. *National Flood Insurance Program Community Rating System*, *supra* note 102.

164. *Id.*

165. *Id.*

166. Homeowner Flood Insurance Affordability Act of 2014, Pub. L. No. 113-89, § 6, 128 Stat. 1023.

167. Heath, *supra* note 4.

168. *Id.*

169. *Id.*

of flood insurance in an age of unprecedented rising seas may be at least a partial shift back to private flood insurance. In a market-based economy, private insurers are compelled to provide actuarially sound policies at competitive rates if they are to remain solvent. The idea of reintroducing private flood insurance is already gaining traction in the Florida State Senate.¹⁷⁰ The proposition that private flood insurance could fix at least some of the NFIP's problems is not without some critics.¹⁷¹ However, because a private company will generally dictate the terms upon which a policy may be issued, these private insurers are in a much better position than the attenuated reach of the federal government to incentivize and monitor mitigation approaches and enforce penalties for allowing policies to lapse. The consumer base for private flood insurance could not be more robust than it is now in the era of failed governmental reforms and societal backlashes.

3. Pinellas County: Buyouts for Those Already in Trouble

Like Brevard, Pinellas County holds a rating of seven in the NFIP's CRS and offers the same percentage discounts to its residents.¹⁷² The difference is that Pinellas's population density dwarfs that of Brevard, which can be readily inferred just by looking at the size of each county in comparison.¹⁷³ With more people tightly packed into a smaller area, the effects of flooding, hurricanes, and storm surge are felt by a greater number of people and have more structures upon which to inflict damage. A lot of Pinellas's infrastructure was put into place before the NFIP, and a number of its communities are filled with homes and buildings constructed before FIRMs became available.¹⁷⁴ This leaves the area particularly vulnerable to sea level rise and floods reaching farther inland, perhaps from both sides, converging in the middle of the peninsula.

In addition to the HFIAA-14 policy changes, this area would most likely benefit from a buyout program for distressed owners who simply cannot afford the real cost of flood insurance or to rebuild their

170. Mary Ellen Klas, *State Senate Passes Bill to Give Florida Flood Insurance Option*, MIAMI HERALD (Mar. 26, 2014), <http://www.miamiherald.com/news/state/article1962053.html>; Bradley L. Kading, *Commentary: Private Insurance Market is Ready for Flood Options*, PALM BEACH POST (Jan. 30, 2015), <http://www.palmbeachpost.com/news/news/opinion/commentary-private-insurance-market-is-ready-for-f/njzPw/>.

171. Ron Hurtibise, *Private Flood Insurance Offerings Grow, But Not for Cheap Subsidized Policies*, SUN SENTINEL (Sept. 30, 2014), <http://www.sun-sentinel.com/business/fl-private-flood-insurance-20140927-story.html>.

172. *National Flood Insurance Program Community Rating System*, *supra* note 102.

173. *State and County Quick Facts*, *supra* note 134.

174. PINELLAS COUNTY, *supra* note 148.

homes to make them more resistant to flooding. Barrier island towns and cities, including Indian Rocks Beach, Indian Shores, Redington Beach, Redington Shores, and Madeira Beach, protect a lot of the main trunk of Pinellas. As the names suggest, most of these towns and cities, and by extension their economies, are based on or around beaches and beach activities. Retreat from these areas can only flee so far away from the Gulf before residents meet the intra-coastal on the other side. A member of the Indian Shores Town Council put it best when, in response to NFIP rate hikes, he said: "I built this according to code and I'm on the intra[-]coastal side, not the Gulf; but in the real world, if we have a direct hit, we're going to be a speed bump for the mainland."¹⁷⁵ In the same article, the council member indicated that under FEMA's new maps of his city, insurance rates for his residents doubled or tripled, noting that lifting a fifty-year-old beach cottage is likely too expensive for many, leaving the residents no other choice but to leave or hope for the best. This is where the buyout program, similar to the one established in New Jersey after Superstorm Sandy, would provide a third option.

Using the Superstorm Sandy Blue Acres Buyout (Blue Acres) program in New Jersey as a guide, Florida could implement a similar program to give distressed owners a way to leave their homes with something, rather than remaining in a home that will likely be underwater, both literally and figuratively. In New Jersey's Blue Acres program, the state uses federal disaster funds to give owners the option to sell Sandy-damaged homes in flood-prone areas at pre-storm value.¹⁷⁶ The program uses some of the following criteria to evaluate each neighborhood within which it decides to offer buyouts: flood damage from Superstorm Sandy, or repeated flood damage from previous storms; willing sellers (as the program is strictly voluntary); clusters of flood-prone homes, or whole neighborhoods; and other criteria.¹⁷⁷

Pinellas could benefit from utilizing the same criteria, but with some adjustments. Although highly vulnerable to flooding and hurricanes, Pinellas remains largely unscathed in comparison to Louisiana, New Jersey, and other parts of Florida. The proposed program for Pinellas, or Florida generally, could be adjusted to include the following provisions: repeated flood damage from previous storms or storm

175. Boatwright, *supra* note 3.

176. Blue Acres Floodplain Acquisition, NEW JERSEY DEP'T ENVTL PROT., http://www.state.nj.us/dep/greenacres/blue_flood_ac.html#overview (last updated May 20, 2015).

177. Other criteria include: support from the local government; cost-effectiveness of the buyout according to FEMA guidelines under federal law; and opportunity for significant environmental impact and/or improvement to public health, safety, and welfare. *Id.*

surges; willing sellers (as the program is strictly voluntary); support from the local government; clusters of flood-prone homes, or whole neighborhoods; cost-effectiveness of the buyout according to FEMA guidelines under federal law; opportunity for significant environmental impact and/or improvement to public health, safety, and welfare; predicted sea level rise and tidal flooding models; and allowing for commercial properties to be considered, but contemplating the potential local economic impact of buyout for these properties.

While the buyout program would not be a panacea for all the issues facing the residents of Pinellas in securing affordable flood insurance, it at least allows for another alternative to spending money the residents likely do not have.

CONCLUSION

The federal government's attempt at flood insurance through the NFIP has continued to limp on in the wake of reform after reform and superstorms, alike. The problem is that exponentially intensifying effects of climate change have become the deathblows to an already mortally wounded program, much to the chagrin of those denying that climate change is a reality for this generation. The climate change adaptation sensitive options that should and need to be instituted within the NFIP, particularly to protect Florida, are not intended to be a cure, but rather a procedure by which the NFIP's life is extended. It is inevitable that the NFIP's ship should sink if it remains on its current course, but that does not mean Florida's residents have to go down with it.